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BASIC NEEDS OF MAN IN SOCIETY

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Editor's note: Educationalists have become increasingly aware of the importance of educational objectives and of developing more objective means of determining the human needs upon which these objectives may be based. The choice of learning experiences, methods, materials, and means of evaluation are all closely related and dependent upon objectives. The author offers certain suggestions and comments upon methods of discovering and validating descriptions of human needs.

THE problem of security has plagued mankind always. With the emergence of each phase of civilization, there has been hope of solving it. But civilization, growing without plan, has given man only partial control of some of his upsetting surroundings. Sporadic attempts to solve the problem of human security have produced some gains in man's ability to control the physical world, but no durable solution.

To construct an enduring civilization in which creatures can be secure, in their ability to satisfy common needs, it may be useful to base systematic plans on knowledge of human needs. In order that man may be secure, persistent and universal human needs have to be satisfied. Yet, nowhere can we find a reliable description of enduring human needs.

Many attempts have been made to discover the enduring needs of man, but these have failed from excess of verbal analysis, and from insufficient operational analysis of both the bodily processes involved in these needs and of the actions by which they are satisfied. To date, two main results have emerged from attempts to describe forces that drive men into action: (a) Some analysts have arrived at an explanation by means of the magic word, instinct.

The research, on which this article is based, was undertaken while the writer was a Proctor Fellow of Princeton University, a Fellow of the International Institute of African Languages and Cultures, A Fellow of the Social Science Research Council, and Director and Fellow of the Science of Man Foundation.

(18,p.4); and (b) Other searchers arrived at another magic word, happiness (3,pp. 1–18), which with its clouds of synonyms indicates a vague feeling discovered by introspection, a method of analysis yielding unpredictable results. Scant knowledge of man's actions, or of man's enduring needs, has come from verbal-fiction and introspective analyses of the springs of human conduct.

Social scientists, as contrasted with physiological psychologists, have tried to understand man by studying social environments apart from their lasting influence on human behavior. In the social sciences the evanescent effects of environments on human behavior are sometimes described, but these descriptions are concerned very much with environments and very little with the durable influence of environments on people. Consequently, real knowledge of the universal behavior of man, permitting predictions of high probable accuracy, have not and probably cannot be obtained from most reports in the subject matter of the social sciences.

Many reasons are offered by the practitioners of the social sciences for failure to describe man's social environments so that social behavior can be understood and accurate predictions of social behavior made. Perhaps this inability is rooted in lack of understanding of enduring human needs, and our failure to penetrate through superficial behavior to its foundations. This arises in part from the diverting influence on man of complex social environments, and in part from investigators' ignorance of the inner bodily sources of human behavior. Anyhow, be it because of ignorance or because of confusion of surface behavior with its sources of origin, the fact remains: social scientists do not understand man's basic needs which persist, beneath the superimposed veneer of his socially conditioned behavior, and shape the actions which are common to all of mankind.

Although social scientists have not adequately analyzed the basic needs of human beings which determine so much of behavior, the changing surroundings which people try to control to satisfy their basic needs have been investigated, described, analyzed and reanalyzed, sometimes in symbols representing the actual operations of the forces involved and sometimes in verbal fictions. Yet, understanding of man's social behavior is still unknown to the investigators. To describe mutable environments without noting their effects on the people subject to them (36,p.4,pp.14–16) is to ignore the constructive purpose for which such descriptions are made. Similarly, to describe behavior elicited by artifactual environmental influences, but never exhibited in real

life, is often to do no more than register purposeless facts. Confusion produced by glib ignorance has not solved vital social problems.

In the absence of facts concerning the lasting influence of social forces on behavior, the customary procedure has been to rely, with mysterious confidence, on the explanatory magic of words mischievously abstracted from reality. Many writers in the social sciences base their conclusions on introspections, and on casual observations of behavior, or more fashionably, on the summation of incommensurable items. The resulting dreamlike monstrosities reveal nothing more than pleonastic fulfillment of repressed wishes. Witness the imaginary structure of classical economists—the economic man —upon which intricate economic theories have been built. To base predictions on such a foundation is like blowing soap bubbles in warm sunlight. Bewitching phantoms may appear. But they soon collapse. Naturally, with the remnants of punctured theories laying about them, a few perspicacious sociologists have attempted to find a solid foundation for their theories. Yet most of such attempts have been abortive, because these investigators grounded their quaint analyses on exotic, behavioral abstractions which paraded illegitimately under the protective cloak of psychology. Fortunately, most of such psychological anacronisms are now obsolete.[1] Nevertheless, the tradition lives on. And so does the problem.

Since word-fiction and introspective analyses of human actions have produced so much useless material, other approaches to the understanding of man may be tried and found more useful. Scientific and operational analysis of forces that make men act may result in knowledge of man and his surroundings which will permit solution of the problem of human security. The needs common to all of mankind may be found, it would seem, by comparing the behavior of people living in varied surroundings in different parts of the world, and by sorting out the behavior common to all persons from that peculiar to any person or group, and by relating that common behavior to the bodily processes also found among all of mankind. By this procedure several universal needs of man have been discovered.

By contrasting the behavior of people living in varied environments in different parts of the world, several units of behavior, several habitual responses, common to all of the people in the various societies may be observed.

[1] e.g. Graham Wallas (36) bases his analyses of behavior in political situations on "instincts". Also, Alfred Vierkandt (35,p.70). Instinct as they used the word is an outmoded bottom unit in the description of behavior. cf. Kuo (23), Holt (18,p.4).

Also, certain kinds of environmental arrangements are usually present when these habitual responses appear. It is probable that common physiological processes are concomitant with these common responses produced by common kinds of elicitors. In each of a number of societies studied recently by the present writer,[2] continued absence of any of the stimuli, which elicit responses common to members of all of these societies, was followed by perceptible signs of strain and upset. Also, continued presence of stimuli which elicited responses common to members of all of the societies studied without elicitation of the usual responses was followed by perceptible signs of strain and of upset. The people of every society studied tried to avoid conditions that produced enduring strain and upset.

Since direct observations of the physiological processes, which constitute upset inside a responding body, are not available, upset had to be inferred from available evidence: from a knowledge of the physiological functions of the human body; from overt signs of upset in the behavior of the responding person; from the presence in the environment of active conditions which usually elicit upset; from responses of avoidance of environmental forces which the organism had learned were upsetting; and from the introspective reports of feelings of unrest, tension, strain or upset accompanying the inferred upset. When upset was revealed by evidence from each of these sources, in agreement with each other, it was concluded to be actually present. These conditions of upset may, of course, be studied individually and systematically in the laboratory.

In the writer's investigations it was found that everybody, observed in a variety of surroundings in different parts of the world, tries to avoid lasting strain and upset. Many of the forces eliciting upset in the people living in these different parts of the world are essentially the same.

Conditions of the human body and its environment, which nobody can escape without suffering continual or repeated upset, constitute man's basic needs. Common to all of mankind there appear to be three basic needs, as follows:

THE NEED FOR ADEQUATE EXTERNAL ENERGY AND SUPPLEMENTARY STIMULATION TO ELICIT HABITUAL RESPONSES INITIATED BY INTERNAL AND UNAVOIDABLE STIMULI. Food,

[2] Especially the Loma, Gbande and Gissi peoples of West Africa, the Swazi of Natal, South Africa, and the English, German, Scandinavian and American peoples of Western Civilization.

water, air, materials used in sleeping, materials used to control temperature and excessive stimulation, and materials used to control forces that destroy healthy tissues, or produce lasting pain, are required for satisfaction of this basic need. Sex objects, which are often used by many people to satisfy certain recurrent and fairly persistent conditions, may be classed in association with this basic need; since sex objects are not essential for and are not universally used for eliciting responses initiated by internal (sex) stimuli, sex objects are not classed strictly as objects needed to satisfy this basic need.

THE NEED FOR BODILY CONDITIONS PERMITTING HABITUAL RESPONSES TO USUAL STIMULI. Fairly constant metabolism within the body and an even body temperature together with healthy tissue functioning without lasting pain are required for satisfaction of this basic need. Body parts should be able to respond smoothly and freely to effective stimuli in order that this need may be satisfied; but, as in the case of cripples deprived of ability to respond freely as usual to effective stimuli, this ability is not in every case required for satisfaction of this need.

THE NEED FOR PREDICTABLE AND USUALLY FAVORABLE SURROUNDINGS IN WHICH TO FUNCTION. People reacting predictably, and usually favorably, and forces of the physical world reacting predictably, and usually favorably, are required for satisfaction of this basic need in any social group. Understanding of ourselves and of the world where we live is important for satisfaction of this need.

Lasting pleasure is not attained, that is, recurring upset is not avoided, by persons who can neither learn to satisfy these basic needs nor adequately satisfy them in the way they have learned to satisfy them. The people observed, learned whenever possible to control their surroundings and themselves to avoid upset.

In every part of the world people try to avoid persistent upset bodily processes resulting from such conditions as continual hunger, disease, germs, too hot and too cold temperatures, or too strong sounds, lights or crushing pressures; everywhere people try to avoid demanding social intercourse while suffering from a sharp pain, perhaps a headache, and avoid starting a delicately integrated series of responses while fatigued, such as driving an automobile through thick traffic after having been continuously awake for four days and nights; and people try to avoid unpredictable, upsetting neighbors, perhaps persons who continually violate customary ways of behaving, or always act without following the rules of polite action of the group, for

customs of polite behavior are found in every human society throughout the world.

Most human beings learn to avoid most of the upsetting forces in their worlds; they learn to control their surroundings, whenever possible, and satisfy their basic needs. As they learn to use the materials around them to satisfy their needs, they develop habits[3] which usually help them satisfy their needs.

Habitual responses that are common to many peoples, are developed as ways of satisfying the basic needs of man. Consequently, many of the most frequent-appearing responses in one social group will also be among the most frequent-appearing in other groups. Yet, many of the stimuli which elicit these responses vary in different societies. In one society, for example, a man may be stimulated to sex behavior by the color and chic lines of a woman's dress; in another society it may be the swing of a pendulant breast that excites. Although the exciting stimuli may vary and the responses may vary in unessential details, in their more superficial aspects, the responses of the males in the different societies is apt to be similar in certain respects.

Most behavior springs from these basic needs and conditions. Behavior reflecting basic needs is composed of nervous, vascular, glandular and other physiological processes. For example, hunger is due partly to the absence of food from the stomach and partly to concomitant visceral, vascular, nervous and other physiological changes.

A suggestive preliminary sketch of the physiological processes involved in hunger and its satisfaction will show how upset, that is, lack of integrated bodily processes, may result from an unsatisfied basic need. A somewhat fuller sketch further along of certain bodily processes involved in non-satisfaction of hunger will indicate some of the important constituent physiological activities which participate in unintegration, and further will suggest how recourse to psychological and physiological facts may lead to fuller descriptions of the real[4] effects of social institutions on behavior.

When there is little or no food in the stomach, the walls of the stomach contract. (4) (5) Thereupon, volleys of nerve impulses leave the stomach

[3] Habitual responses to recurring stimuli can be discovered by taking an inventory of all stimuli and responses and establishing the relative frequency of appearance of each.

[4] The word, real, as used here means simply relatively permanent, that is, high degree of probability that predicted events will recur when certain other conditions reappear.

walls (31,pp.1628–9). Concomitantly, peripheral blood vessels constrict and visceral blood vessels expand; a great amount of blood shifts from the skin and peripheral muscles of the body to the viscera (16). As the blood shifts from the limbs to the center of the body, volleys of nerve impulses leave the contracting and expanding vascular walls (11,pp.32–3,45–7,62–3).

Some of these nerve impulses may proceed to endocrine glands which dump secretions directly into the blood stream (34,pp.954–56,949–965). Certain of these secreted substances tend to inhibit particular reactions (29, p.i–iii), but others facilitate processes already underway (14,p.437), and increase thereby the total number of nerve impulses brought into play (13) (1). Such changes in vascular, glandular and nervous activities constitute hunger. The behavioral evidences of unsatisfied hunger have been frequently observed. These effects are even evident in the behavior of very young children (6,p.122). Hunger seems to involve great volleys of nerve impulses which elicit increased or restless movements (32). In an adult movements resulting from hunger usually lead quickly to eating which satisfies the need for food, that is, it removes many of the antecedents of the increased number of nerve impulses which had produced restlessness. These movements, which are immediate on the part of the adult, have to be learned slowly by a child. A restless baby is gradually taught to suck and swallow (6,pp.97–8,103,109, 122) and later to reach for food, carry it to his mouth, chew it and swallow it. As a result of this training the nerve impulses which at first cause restless, random movements later are so integrated that they produce efficient, coordinated movements which we observe behavioristically to result in eating.

Whenever the responses of eating do not occur in normal fashion, however, the millions of nerve impulses which normally bring these responses about are diverted into new outlets. They proceed along any nerve paths which are prepared to receive them. Some of these nerve paths may lead to muscles which are antagonistic (33) (57,p.201) (18,pp.240–251) to the muscle-patterns involved in normal feeding. We may picture this process and its results as strife of motor tendencies due to shunting of excessive nerve impulses into nerve channels serving antagonistic responses. The clashing effects of these inhibited, blocked, conflicting, opposed impulses elicit tendencies and responses which are unintegrated and are probably reported introspectively as unpleasant. Unpleasantness which is the result of opposed physiological processes may be intensified when habitual responses are attempted

while normal nutrition requisite for the maintenance of these activities is lacking.[5]

From an analysis of the physiological changes which participate in physiological upset due to need of food, it is evident that striped and smooth muscles and glands are involved and that the nervous and vascular systems participate. These structures and systems of structures and processes interact in a highly complex fashion.

Consequently, the harmonious integration of the interacting parts of these structures and systems may be easily upset. That this frequently happens is evident in the behavorial manifestations of their underlying upset interactions. Inefficiency of the complex physiological activities underlying an upset response may be exhibited overtly in uncoordinated behavior. It is exhibited, for example, in the behavior of a person learning to play a new game that requires quite new combinations of movements.

The precise nature of particular unintegration depends on the past history of the organism and the factors influencing it at the time of upset. Similarly, well-coordinated and integrated responses depend upon previous patterns of response as well as upon the nature of the stimuli that affect the organism at the time of the response. Previous patterns of response depend greatly upon early conditioning and cross-conditioning of responses to many different stimuli (18,p.221–229). A cross-section at any given moment, of the results of the conditioning process, reveals a fascinating picture. The entire responding adult organism can be regarded as replete with fluctuating unconscious tendencies; when these tendencies are harmonized and integrated the response is graceful and pleasant, but when these tendencies are antagonistic the resultant response is apt to be awkward and unpleasant because unintegrated. A common characteristic of various complex physiological conditions which seem frequently to foster unintegration is opposition of one physiological process to another.

Whenever opposed physiological processes operate simultaneously, or nearly simultaneously, unintegrated responses are apt to result. Of the many structures within a human being which may function antagonistically a few may be mentioned briefly. Groups of striated muscles may interfere with the proper functioning of other groups of striated muscles. Such striped muscle

[5] Metabolism sinks rapidly during the first two days of starvation (34,p.557), therefore regular behavior requiring normal metabolism cannot be maintained, and habitual responses are upset. (4) (7,p.535) (24,p.113).

clashes are usually mediated through the central nervous and endocrine systems. Clashing striped muscle responses bring in their wake opposed vascular responses, and obversely, opposition between vascular responses may be accompanied by some sort of skeletal muscular strife. Certain glands may oppose others, particularly in their effects upon the other effector mechanisms of the body. Finally, certain glands together with smooth muscles may tend to counteract the effects of skeletal muscular activity. Viewing these mechanisms and their functions summarily, it is obvious that nearly any effector (37,p.3,36,45) may be functionally aligned against any other effector.

Even this simplified picture of the mechanisms through which opposed reactions or tendencies to reaction may be mediated is quite complex. The manifold complexity increases when the possible instigators of and mechanisms for strife among responses are investigated.

Among the mechanisms which mediate effector opposition is the vascular system. It may assist understanding of effector opposition to describe, illustratively, how the vascular system may be involved in antagonistic responses which produce unintegration.

Strife between vascular activities may involve certain distributions of blood which are conductive to inefficiency of responses. Thus, the blood at a given moment in the capillaries of certain peripheral muscles may be at that moment concentrated in other muscular regions or in the viscera.

Opposition of vascular mechanisms may be brought about in several different ways. Processes which tend to lower blood pressure while present with processes which tend to raise the pressure may produce a condition in which these antithetical processes tend to expand and constrict certain blood vessels simultaneously. Likewise, a situation requiring a rapid heart rate may produce vascular conflict and unintegration if operating concomitantly with other factors which tend to make the heart beat slowly. On the other hand, a rapid heart rate may be present in a situation requiring usually a slow heart beat. Thus, antithetical vascular reactions which include constricting and dilating blood vessels, slow and rapid heart rate, and other factors which cause low or high blood pressure (38,p.125), all may foster unintegration.

Among those opposed vascular reactions constriction and dilatation of arteries, arterioles and capillaries are prominent participants in unintegration. A more detailed analysis of factors which effect arterioles and capillaries will, while adding the clarity of specific facts, also demonstrate how an

understanding of physiological fact is requisite for an adequate understanding of the influence of the environment and of social institutions on behavior.

There are many environmental and physiological factors which may elicit opposed vascular reactions by being present simultaneously. Thus, dilatation of arterioles and capillaries may be produced by chemicals (21,pp.179, 189) in certain amounts, for example, histamine (20), acetylcholine (11, pp.58–62), urethane (19,p.418), (34,p.801), alkalis and veronal sodium (20, p.416), or accumulation of carbon dioxide (17,p.535). Dilatation may also result from moderate warmth applied locally on the skin (11,p.64), from gentle or limited sensory stimulation (22,p.164) (25,pp.421–437), from ultraviolet rays (11,p.64), or from factors which instigate posterior nerve root impulses (21,p.189) (34,p.797) (11,p.62). Dilatation of peripheral capillaries may be brought about by muscle tone augmentation (12,p.92), by exercise (2,p.639), by mental activity (9,pp.459–461), and by suggestion (10,p.144). Arterioles and capillaries may be constricted on the other hand by sudden (8,pp.334–340), or widespread or intense stimulation (22) (21) (27,pp.98–107) (25,pp.421–437) (26,p.228), by cold objects in contact with the skin (11,p.64), by certain amounts of adrenaline (19) (15) (30) (17,p.551) (38, p.153), by weak acids (20,p.419) or factors which elicit sympathetic nerve impulses from the ninth and tenth sympathetic ganglia (21,p.79) to the capillaries. Any of the first group of factors which dilate capillaries and arterioles may effect an organism simultaneously with any of the latter which constrict them.

When any of these opposed vascular activities are operating simultaneously they contribute to unintegration. Derived in this fashion unintegration is sometimes visibly reflected in behavior; overt evidence of clashing physiological processes may be observed. The following example indicates some of the conditions of upset that occur when opposed vascular activities are brought simultaneously into play.

If a man runs rapidly, his heart rate increases and his peripheral capillaries and arterioles dilate so that blood sufficient to remove metabolic waste products produced by the running is distributed to the peripheral muscles. If the man eats a large meal just before running, however, the food in his stomach brings great quantities of blood to the viscera, and makes the visceral arterioles and capillaries dilate. Consequently, in spite of an increased heart rate the amount of blood is not adequate to supply both the peripheral muscles and the visceral effectors at the same time. The result of this con-

dition is opposition (unintegration) of the physiological processes involved. It is called nausea, and is unpleasant.[6]

This illustrates typical behavioral and introspective evidence of unintegration due to opposition between vascular reactions in different regions of the body. Although the vascular reactions presented here constitute specific physiological processes which participate in unintegration, it is incorrect to conclude that vascular mechanisms are the ONLY such participants, for there are many other physiological processes which are conducive to unintegration.

Thus responses which are not well cross-conditioned are apt to be unintegrated. This may be evident in behavior. In learning a new game, for example, there are so many things to attend to at the same time, so many stimuli not previously cross-conditioned and integrated, that the novice seems always to be doing the wrong thing. He is clumsy; his responses to the stimuli of the new game are not well integrated. Likewise, any strong stimulus which affects a responding organism too suddenly to be integrated at once is apt to elicit responses opposed, at least in part, to those already underway. The unintegration produced by a sudden stimulus is sometimes visibly reflected in behavior. A pistol shot, for example, produces a start, a behavioral evidence of unintegration. Likewise, when no dynamogenic (28) external stimuli support an habitual activity, unintegration may ensue. For example, a man trying to read a book on a subway does not often fall asleep, because of the dynamogenic effect of the surrounding noise. Yet the same person may exhibit considerable strain—a sign of unintegration—when he tries to keep awake to read this same book in the quiet depths of a comfortable chair in a noiseless library. Thus, new stimuli, sudden strong stimuli, and lack of dynamogenic support for maintenance of an habitual activity all elicit responses involving physiological processes which may participate in unintegration. These are but a few of the many different kinds of conditions which may participate in provoking unintegrated bodily processes.

The foregoing sketches, suggestive of the nature and number of physiological processes which may participate in unintegration, are merely part of a larger canvass.

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[6] Social customs, rules of conduct, conditions of work, conditions of daily living, the effect of inconsistent laws on people, may all be demonstrated, if truly undesirable, to produce upset physiological conditions comparable to nausea, except that often these conditions are not so sudden in their onset as those which produce nausea.

Among the conditions eliciting upset in human beings are social forces that shape much of man's behavior. Avoidance of strain and upset by human beings requires understanding of man's actions and of the forces conditioning these actions, among which are not only social forces but also bodily forces involved in human upset. It would seem that all human beings have in common three enduring needs, which must be continually satisfied if lasting bodily upset is to be avoided. Studies of these basic needs of man would seem to lay the foundations for new social orders and to constitute the starting point for educational endeavor.

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THE DEVELOPMENT OF READINESS TESTS IN ARITHMETIC

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Editor's note: Much has been written in recent years relative to the importance and use of readiness tests. The author suggests the use of specially constructed diagnostic tests for this purpose in arithmetic.

STUDIES dealing with readiness tests in the field of reading have almost uniformly considered their function to be prediction of reading ability at the end of the first or second grade. Recent studies by Gates and his associates have shown that there is a wide range in the predictive value of the readiness tests that are available. At the present time a prediction coefficient of +.50 to +.60 is all that can be expected from even the best of the readiness tests. It is highly significant that Gates has concluded that "the best reading readiness testing consists essentially in making an 'inventory' of various interests and of the techniques used in reading itself." In brief, this means that the best readiness test for predictive purposes is a test of the actual reading abilities, techniques, skills, and interests to be developed by the reading program. In other words the pupil who makes the highest scores on tests of various kinds of reading when he enters school is likely to be the best reader at some subsequent point in the school.

Very little has been done to develop readiness tests for predictive purposes in the field of arithmetic. Some years ago Hildreth published a readiness test that predicts about +.50 success in arithmetic at the end of grades 2 and 3. Almost nothing has been done to develop tests of this kind for arithmetic for levels above the first grade. Interest in the problem of readiness was a primary factor in the work of the Committee of Seven which undertook the task of determining the mental levels necessary for successful mastery of the various processes in arithmetic. However, little was done by this Committee in the field of prediction of success. The use made by this Committee of so-called "foundation tests" is also closely related to the question of readiness testing.

For several years the writer has felt that the most useful function of readiness tests in the field of both reading and arithmetic was not *prediction* of success in the primary grades or any other grade, but the *diagnosis* of factors likely to interfere with learning at any level of the school, at any stage of development, or in the study of any particular process or topic in the curriculum. To develop valid tests for predictive purposes it is the prob-

lem of the test maker to discover test content that correlates highly with some criterion of learning at a subsequent time. To develop valid tests for diagnostic purposes it is the problem of the test maker to discover the basic concepts, skills, and abilities the lack of which is likely to interfere with successful mastery of the next process or topic to be presented to the pupils. Then he must construct tests that will give satisfactory information about the present status of the individual with respect to these basic factors. On the basis of this information the teacher can then so organize the instructional program that steps can be taken to correct the conditions that otherwise might interfere seriously with the success of particular individuals in the study of the new topic or process about to be presented.

Arithmetic lends itself quite easily to this diagnostic approach to readiness testing. It consists of a hierarchy of skills and concepts. Each new topic builds on the body of skills that have previously been introduced. Unless the learner has adequate mastery of the essential basic skills previously taught, he will encounter difficulty with the new process. It thus seems quite obvious that one way in which to determine the pupil's readiness for a new topic or process would be to determine the control he has over the essential concepts, ideas, and skills that he should possess before he begins the work on the new content. The validity of this approach can be determined in two ways, one, by studying groups of pupils by means of suitable tests to determine the extent to which they have control over basic skills and ideas, required in the new work, and the other, by determining the relationship between scores on such readiness tests and subsequent success in the mastery of the new work.

As an illustration of the steps that may be taken to develop this kind of arithmetic readiness test, we wish to discuss the procedures used to devise and validate a readiness test for easy work in division by two figure divisors, when the apparent quotient is the true quotient. The data are from a master's dissertation by Frances Norman who undertook the task of evaluating a readiness test, devised by L. J. Brueckner.

The first step consisted in the analysis of what appeared to be the basic skills the pupils should have before the work with two-figure divisors is begun. The result was the construction of a series of nine sub-tests, each of which deals with a different aspect of the basic skills judged to be essential. The contents of each sub-test are defined in the analysis below. Very generous time limits were set for each part of the test.

TABLE I
ANALYSIS OF READINESS TEST IN EASY LONG DIVISION

Section A

Part I. Knowledge of place value in three place numbers. (4 minutes)
Part II. Multiplication used in division, in the form of quotient times divisor. (4 minutes)
Part III. Knowledge of difficult division combinations. (5 minutes)
Part IV. Knowledge of process with one-figure divisors and dividends of two to four figures. (10 minutes)

Section B

Part V. Judging the correctness of quotient figures, some of which were too large, others correct, others too small. (4 minutes)
Part VI. Completing the work to determine correctness of given quotient figures. (6 minutes)
Part VII. Subtraction used in division. (5 minutes)
Part VIII. Mental multiplication of two-place number by a one-place number. (5 minutes)
Part IX. Comparing product of a two-place number multiplied by a one-place number with a given number—a dividend. (5 minutes)

This readiness test was first tried out experimentally with small groups of children and revised several times. Then it was administered early in March of last year to the pupils in the 5B classes in six schools of Minneapolis, who were about to begin the study of division with two-figure divisors. The median I.Q. of these children was 96 as measured by the Minneapolis Revised Ability Test I. The chronological ages ranged from 9 years to 12 years 7 months. The teachers all were to teach division as presented in the basic text book. The results of the readiness tests were not made available to the teachers, since it was the purpose of the investigators to discover what the relationship was between the results of the readiness test and success in learning the process when no attempt was made to correct difficulties that would be revealed by the results of the readiness tests. The teachers were free to use any remedial measures they might care to use to correct weaknesses they might discover in other ways. After the steps in the process had all been taught up to the point when the difficulty of correcting the apparent quotient figure was to be introduced, a comprehensive test of twelve examples with two-figure divisors and two and three figure quotients was administered to secure a measure of pupil success in learning the process. The results of this test were checked against the results of the readiness test. This end test was given during the week of April 17 to 21. Thus an interval of about six weeks elapsed between the giving of the readiness test and the end test.

The results for the readiness test and end test are summarized for all classes combined in Table II. In this table the distributions of scores in each

of the nine parts of the readiness test and in the end test are given. At the foot of the table are given the number of cases, the median score for each part, the number of items in each part and data about the total scores. In all cases the scores are based on the number of items incorrect.

Several important conclusions can be drawn from the data. On every part of the readiness test except Part IV the range of the scores was from no errors to every item incorrect. The total scores for individuals ranged from 1 error to 87 errors. When one considers the fact that these children were all about to begin the study of long division, it is astonishing that such a marked range of ability should be found in the group. Note the wide range of scores on Part IV, a test of division by one-figure divisors. If one can assume that the tests are in fact valid measures of the simple skills they test, it is obvious that many of these pupils had such serious deficiencies in basic essentials that failure to succeed in the new work was a foregone conclusion, unless steps were taken by the teacher to correct the shortcomings. The results of the end test show that large numbers of the 125 children who still were in the groups at the end of the experiment made very little progress in the process. The median per cent of accuracy on the end test was about 55 per cent. The question definitely arises, would the results of the end test have been different if the teachers had been given the results of the readiness test so that they could have taken steps to eliminate weaknesses that undoubtedly led to ineffective learning? This question is being studied at the present time by another investigator.

Results similar to those given for long division in Table II have been found in almost all classes where readiness tests in other processes, in whole numbers, fractions, decimals, per cent, area, etc., constructed in a like manner, have been administered. It thus seems clear that the validity of this diagnostic approach to readiness testing has been well established. Readiness tests of this kind are in a sense another form of diagnostic test to be used for preventive purposes, rather than diagnostic tests to be used to establish the need of corrective and remedial measures after work on a process has proceeded for some time, the usual procedure at the present time in the field of diagnosis.

The customary way to determine the validity of a test is to study the relations between the parts of the test and also their relation to some criterion. The data in Table III enable us to establish the validity of the readiness test as a predictive device, a function which the author does not consider

TABLE II

SUMMARY OF SCORES ON READINESS AND END TESTS

No. Incorrect	Scores on Parts of Readiness Test—No. Incorrect									No. Correct End Test
	I	II	III	IV	V	VI	VII	VIII	IX	
14	5	9					4			
13	2	1					0			
12	8	2					0	18		10
11	12	4					2	4		4
10	10	7	20	28	0	5	0	3	0	10
9	9	5	10	12	0	4	2	0	1	4
8	8	2	10	18	2	7	5	4	1	11
7	3	12	10	8	2	10	11	7	8	18
6	5	8	10	8	12	11	5	13	4	21
5	9	8	5	16	17	30	8	14	16	10
4	6	3	9	7	13	20	22	8	22	12
3	9	10	11	11	26	14	12	13	20	11
2	7	6	18	13	34	15	18	10	17	7
1	17	19	18	8	23	13	20	19	26	5
0	30	44	19	11	11	11	31	27	25	2
No. of cases	140	140	140	140	140	140	140	140	140	125
Median	5	3	4	6	3	4	3	4	3	6.7
No. of items	14	14	10	10	10	10	14	12	10	12

Total Scores on Readiness Test: Median—38 items incorrect; possible score, 104. Range in scores—1 to 87 items incorrect.

to be as vital as its diagnostic function. The table contains the intercorrelations of each part of the readiness test with each of the other parts of the test, with the total scores on the readiness test and end test, and the correlation of the total readiness test score with the end test score. Below the table are given several correlations of scores with intelligence test results.

It can be seen at a glance that all of the coefficients are positive. The correlations of parts with parts range from +.07 to +.78, with a median of +.33. With the exception of the correlations involving Parts II and III, Parts II and IV, and Parts III and IV, the correlation coefficients between parts are below .51. It is clear therefore that the different parts of the test do not measure the same thing although there is a positive relationship between the elements they do measure, indicating the presence of a common factor. The correlations of the scores on each part of the text and the total readiness test score are consistently high, with a median of +.578. Parts II, III, and IV contribute most to the total score, Part V the least.

The last column in Table III shows the correlations of each part of the readiness test with the end test, as well as the correlation of the total readiness test score with the end test. The correlations between parts and end test results range from +.145 to +.411. The correlation between the total readiness test score and the end test score is +.455. This result is approximately the same as the result secured with available readiness tests in reading

TABLE III

SUMMARY OF CORRELATIONS OF PARTS OF READINESS TEST WITH EACH OTHER, WITH TOTAL SCORE, AND WITH END TEST RESULTS

Parts	II	III	IV	V	VI	VII	VIII	IX	Total Readiness	End Test
I	.25	.38	.26	.03	.23	.31	.33	.17	.575 ± .04	.145 ± .05
II		.78	.74	.36	.43	.32	.51	.36	.755 ± .02	.285 ± .05
III			.71	.36	.36	.31	.37	.32	.715 ± .02	.358 ± .05
IV				.41	.47	.48	.40	.25	.706 ± .02	.388 ± .05
V					.34	.14	.17	.07	.442 ± .05	.192 ± .05
VI						.34	.29	.26	.600 ± .03	.375 ± .05
VII							.27	.38	.578 ± .04	.411 ± .04
VIII								.49	.630 ± .03	.233 ± .05
IX									.525 ± .04	.363 ± .05
Readiness Total										.455 ± .04

Correlations: M.A. and Readiness Test .57 ± .05
M.A. and End Test .45 ± .05
I.Q. and Readiness Test .61 ± .04
I.Q. and End Test .32 ± .06

Correlation of Total Score on Parts IV, IV, VI, VII, and IX and End Test .54 ± .04

and arithmetic which were constructed for predictive purposes rather than for diagnostic purposes, as was done in the case of the test we are here considering. The predictive value of the readiness test in division can be considerably increased by combining the results for Parts III, IV, VI, VII, and IX. This total correlates +.54 with the end test results. This prediction is considerably higher than a prediction based on either mental age or intelligence quotient. The score on this restricted test is more predictive of results than are most of the reading readiness tests. It is probable that, using as a predictive measure the two items of mental age and readiness test score, the predictive coefficient would be raised to at least +.60.

It thus seems clear that the readiness test we are considering has validity both as a diagnostic device and as a predictive device. It seems quite likely that, when the results of the test are used for diagnostic purposes, its value for predictive purposes may be considerably reduced, since the correction of deficiencies may result in a general upgrading of the work so that the group will be bunched more toward the top of the distribution on the end test, thus lowering the correlation between readiness test and end test scores.

Fairly comprehensive studies of the validity of an extensive series of similarly constructed readiness tests[1] in all processes with whole numbers, fractions, decimals, and per cent have been conducted by the writer and his students. He would welcome the cooperation of other workers in the experimental work needed to refine and validate the tests that have been published in the form of a preliminary experimental edition. The importance of this research and its probable contribution to the improvement of teaching are self evident.

[1] Published by John C. Winston Company, Philadelphia, Pennsylvania.

THE EFFECT OF PROCESS SEQUENCE ON THE INTERPRETATION OF TWO-STEP PROBLEMS IN ARITHMETIC

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Editor's note: A number of writers have concerned themselves with elements of difficulty in the interpretation and solution of problems in arithmetic. The authors of this paper offer data on the relative difficulty of problems in arithmetic involving addition and subtraction.

STUDIES of the various elements in the statement of arithmetic problems, which affect the difficulty of solution, have been comparatively few and recent. Most of the studies in arithmetic have concerned such problems as—methods of teaching the fundamental processes, transfer from taught material to un-taught material, diagnosis and remedial procedures for pupils of various classifications, the relation of reading to arithmetical progress, motivation and arithmetical progress. Even test makers and textbook writers have largely ignored the effect which the statement of a problem may have on the difficulty of its solution. There have been however, a few significant studies along this line.[1]

THE PROBLEM

The problem for this investigation was to discover if the *order* in which the fundamental arithmetic processes appear in problems (involving two steps for solution) affects the difficulty of those problems. More specifically

[1] See the following:

Hydle, L. L., and Clapp, F. L. *Elements of Difficulty in the Interpretation of Concrete Problems in Aritmetic,* Bureau of Educational Research Bulletin, No. 9, University of Wisconsin, 1927.

Washburne, C. W., and Morphett, M. V. "Unfamiliar Situations As a Difficulty in Solving Arithmetic Problems," *Journal of Educational Research,* XVIII (October, 1928), pp. 220–24.

Monroe, Walter S. *How Pupils Solve Problems in Arithmetic,* University of Illinois Bulletin, No. 44, 1929.

Wheat, H. G. *The Relative Merits of Conventional and Imaginative Types of Problems in Arithmetic,* Columbia University Contributions to Education, No. 359, 1929.

Myers, G. C. "Imagination in Arithmetic," *Journal of Education,* CV (June 13, 1927), pp. 662–63.

Wilson, Estaline. "Improving the Ability to Read Arithmetic Problems," *Elementary School Journal,* XXII, pp. 380–86.

Kramer, Grace A. *The Effect of Certain Factors in the Verbal Arithmetic Problem upon Children's Success in the Solution,* Johns Hopkins Studies in Education, No. 20. Baltimore: Johns Hopkins Press, 1933.

stated: what is the effect of reversing the order in which the fundamental arithmetical processes occur on the difficulty of interpreting problems? Is it more difficult for a pupil to interpret an arithmetic problem which involves first addition and then division for its solution, than it is for him to interpret another problem, equated in other respects, but which involves first division and then addition for its solution? For example, which of the following problems is more difficult:

Mr. Smith bought 24 melons for $2.88 and sold them at a profit of $3.12. For how much did he sell each melon?

Mr. Smith bought 24 melons for $2.88 and sold them at a profit of $.13 apiece. For how much did he sell each melon?

There are two significant values which result from a study of this nature. First, the teaching of arithmetic is made easier. It is an accepted fact that children learn arithmetic more readily when they are taught the less difficult material before the more difficult. Consequently it is important to know whether a problem involving addition as the first solution process and multiplication as the second, is more or less difficult than one involving multiplication as the first solution process and addition as the second.

Second, test makers and textbook writers will be assisted in arranging lists of arithmetic problems in order of difficulty. If problems which involve multiplication as the first solution process and division as the second are more difficult than problems which involve division as the first solution process and multiplication as the second, test makers and textbook writers can then arrange their problems in that order. Of course process sequence is not the only factor involved in the difficulty of problem solving, but it is a factor which may have a significant relation to difficulty.

THE TECHNIQUE

The first step in this study was to construct two arithmetic tests, the problems of one being equated with corresponding problems of the other in all respects, except that the *order of occurrence* of the solution processes in one test was reversed from that of the other. Problems of two-step difficulty were used, because three-step problems would have introduced too many process combinations to have been adequately handled in a single test.

The Form A test contained six two-step problems for each of the six possible combinations of the arithmetical processes. These six combinations were:

Addition-Subtraction
Addition-Multiplication
Addition-Division
Subtraction-Division
Subtraction-Multiplication
Multiplication-Division

The Form B test contained the same thirty-six problems which appeared in the Form A test, but they were so stated that the solution processes were reversed in order. Consequently, the six process combinations in the Form B test appeared as follows:

Subtraction-Addition
Multiplication-Addition
Division-Addition
Division-Subtraction
Multiplication-Subtraction
Division-Multiplication

Thus every problem in the Form A test appeared also in the Form B test, but it was changed in such a way that the solution processes were reversed in order. For example, problem fifteen in the Form A test required addition first and multiplication second for its solution. This same problem in the Form B test required multiplication first and addition second for its solution. It is reproduced below as it appeared in both tests.

Form A. A farmer planted corn in two fields, one of 15 acres and the other of 21 acres. His yield in both fields averaged 23 bushels to the acre. How many bushels of corn did he get from both fields?

Form B. A farmer planted corn in one field of 15 acres which yielded an average of 23 bushels to the acre. Another field yielded a total of 160 bushels. How many bushels of corn did he get from both fields?

Since the tests were given to fifth-, sixth- and seventh-grade children, the aim was to construct problems which were of sixth-grade arithmetic difficulty. This was done by a careful search through the available arithmetic textbooks and arithmetic tests for problems at these three grade levels which could be adapted for use in the tests. All factors in the statement of the problem which other studies had found to affect the difficulty of problem solving were considered, such as ease of visualization, familiarity of setting, size of numbers, non-essential elements, vocabulary and statement of problem.

In order to eliminate any "process mind-set" which might influence the results, the process combinations were arranged in mixed order. The order of processes in Form A was as follows:

Form A

Problem	
1.	Addition-Subtraction
2.	Addition-Multiplication
3.	Addition-Division
4.	Subtraction-Division
5.	Subtraction-Multiplication
6.	Multiplication-Division
7.	Addition-Multiplication
8.	Subtraction-Division
9.	Multiplication-Division
10.	Addition-Subtraction
11.	Addition-Division
12.	Subtraction-Multiplication
13.	Addition-Subtraction
14.	Subtraction-Division
15.	Addition-Multiplication
16.	Subtraction-Multiplication
17.	Addition-Division
18.	Multiplication-Division
19.	Subtraction-Multiplication
20.	Addition-Division
21.	Addition-Multiplication
22.	Addition-Subtraction
23.	Multiplication-Division
24.	Subtraction-Division
25.	Addition-Multiplication
26.	Multiplication-Division
27.	Addition-Division
28.	Addition-Subtraction
29.	Subtraction-Multiplication
30.	Subtraction-Division
31.	Addition-Subtraction
32.	Addition-Multiplication
33.	Addition-Division
34.	Subtraction-Division
35.	Subtraction-Multiplication
36.	Multiplication-Division

The problems in the Form B test were arranged in the same order except that the order of processes was reversed.

The second step was to devise some procedure for equating the pupils who took the Form A test with those who took the Form B test on the basis of arithmetical ability. The Ford Arithmetic Reasoning Test was selected.[2] This test could be quickly and easily administered. It was found by its author to have an average reliability coefficient of .85 for the fifth, sixth and seventh grades. He also found that it correlated highly with the Stanford Reasoning, Stanford Computation and Stanford Comprehension Tests.

Since our study concerned only the *interpretation* or *understanding* of arithmetic problems and the *recognition* of the arithmetical processes necessary for solution, it was considered unnecessary to have the problems actually solved. The investigators were not interested in whether or not the pupil could subtract or divide, but whether he knew when subtraction or division was necessary to solve a problem. Consequently, an answer sheet was devised on which the pupil merely checked the arithmetical processes he would use *if* he were actually going to solve the problem. The following directions as they appeared on the tests will illustrate this technique.

Directions

The following problems can be solved by the use of *two* of the arithmetical processes (Addition, Subtraction, Multiplication, Division). But you do not need to actually work out the problems. All you need to do is to show which process you would use first and which one you would use next if you were actually going to solve the problems. You are provided with an answer sheet on which you can check in the first line the process you would use first, and in the second line the process you would use second. The two following problems will show what you should do with the rest of them.

Alice picked 13 quarts of cherries. Her sister picked 6 times as many. How many quarts did both pick together?

	A	S	M	D
1			x	
2	x			

[2] Ford, F. C. *The Correlation of Arithmetic Computation and Reading Comprehension with the Conventional and New Type of Arithmetic Reasoning Test*, Master's Thesis, Pittsburgh: University of Pittsburgh, 1937.

John's mother gave him 45¢ to buy bread. He lost 10¢. How many loaves of bread can he get for the money he has left, if bread costs 7¢ a loaf?

	A	S	M	D
1		x		
2				x

The third step was to administer the tests to a large number of fifth-, sixth- and seventh-grade pupils in cities of varied sizes and in different parts of the country. The Form A test was given to 646 fifth graders, 713 sixth graders, and 775 seventh graders. The Form B test was given to 673 fifth graders, 901 sixth graders, and 736 seventh graders. In all, the tests were given to 4,444 pupils, located in the states of Pennsylvania, Illinois, Minnesota, Montana, Washington and West Virginia.

THE RESULTS

One of the first considerations in the results of the study was whether or not the tests were of the proper degree of difficulty for the pupils tested. The scores on the Ford test closely approximated a normal distribution. The distribution of scores on the Form A test and the Form B test skewed a little more toward the upper levels than did the Ford test. These distributions are shown in Figure I.

The difficulty of the Form A test as compared with the Form B test for all pupils tested is summarized in Table I. Notice that all six problems in each process combination are consistent in their indication of difficulty. From these results it is evident that the order of occurrence of the solution processes in a problem is a factor which definitely affects the difficulty of a problem.

The pupils tested were classified into nine levels of arithmetical ability (according to their scores on the Ford test). Every level told essentially the same story. The process combinations which were more difficult for pupils of inferior arithmetical ability were also more difficult for pupils of average and superior arithmetical ability.

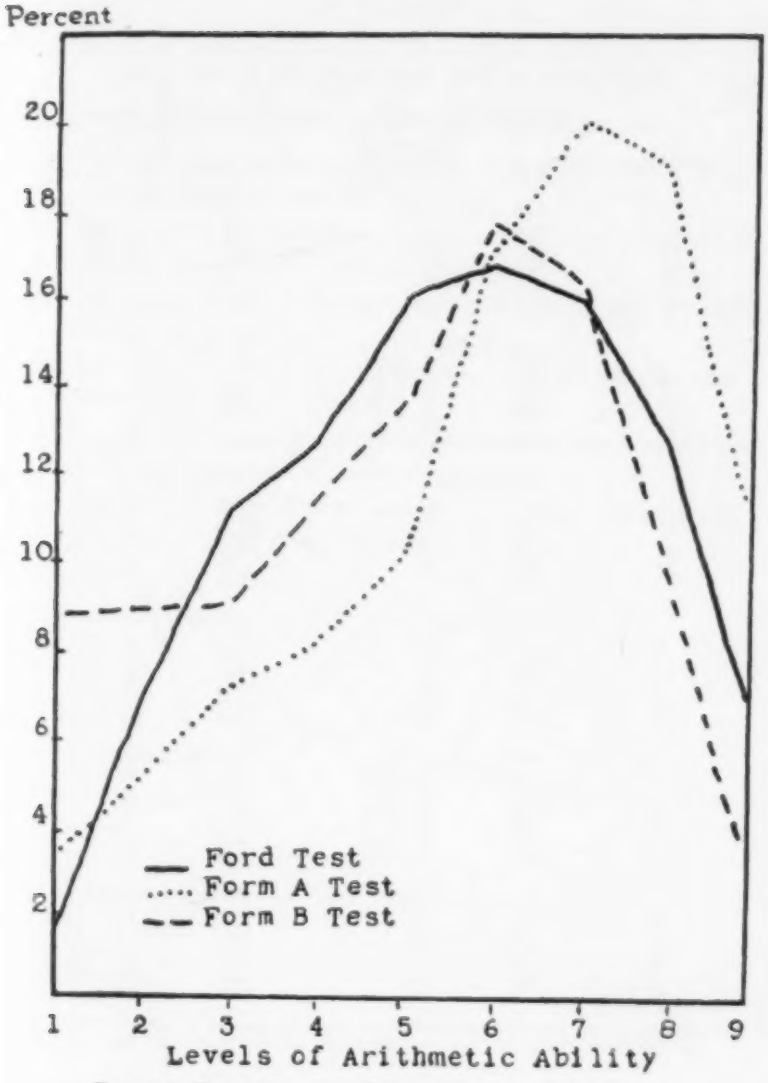

FIGURE I. DISTRIBUTION OF SCORES MADE ON ALL TESTS

TABLE I

ERRORS MADE ON EACH PROBLEM BY ALL PUPILS TESTED

Problems	Form A (2134 cases)		Form B (2310 cases)	
	Number of errors	Percent of pupils making errors	Number of errors	Percent of pupils making errors
	Add-stubtract		Subtract-add	
1	204	9	854	37 (28)
10	260	12	596	25 (13)
13	396	18	708	30 (12)
22	371	17	705	30 (13)
28	258	12	637	27 (15)
31	361	16	634	27 (11)
	Add-multiply		Multiply-add	
2	896	41 (22)	442	19
7	636	29 (2)	626	27
15	1061	49 (18)	722	31
21	510	24 (5)	434	19
25	510	24 (6)	410	18
32	1465	68 (9)	1376	59
	Add-divide		Divide-add	
3	751	35	1810	78 (43)
11	430	20	1563	67 (47)
17	682	31	1106	47 (16)
20	1426	66	1683	73 (7)
27	602	28	936	40 (12)
33	360	16	1211	52 (36)
	Subtract-divide		Divide-subtract	
4	790	36	1070	46 (10)
8	1027	47	1671	72 (25)
14	1466	68	1842	80 (12)
24	708	33	1323	57 (24)
30	830	38	1328	57 (19)
34	1359	63	1599	69 (6)
	Subtract-multiply		Multiply-subtract	
5	1000	46 (12)	801	34
12	1212	56 (28)	646	28
16	1205	56 (27)	668	29
19	563	26 (2)	575	24
29	824	38 (11)	625	27
35	1540	71 (26)	1058	45
	Multiply-divide		Divide-multiply	
6	1096	51	1347	58 (7)
9	394	18	1241	53 (35)
18	434	20	1667	72 (52)
23	380	17	1211	52 (35)
26	1286	60	1777	77 (17)
36	462	21	1674	72 (51)

(Numbers in parenthesis indicate the difference in percentage of pupils making errors on one form of the test over the other.)

CONCLUSION

A number of definite conclusions are justified from this study:

The difficulty of interpreting arithmetic problems is definitely affected by the order of occurrence of the fundamental solution processes.

1. The subtraction-addition combination is more difficult than the addition-subtraction combination.
2. The addition-multiplication combination is slightly more difficult than the multiplication-addition combination.
3. The division-addition combination is more difficult than the addition-division combination.
4. The division-subtraction combination is more difficult than the subtraction-division combination.
5. The subtraction-multiplication combination is more difficult than the multiplication-subtraction combination.
6. The division-multiplication combination is more difficult than the multiplication-division combination.

CHILDREN'S INTERESTS IN COMIC STRIPS*

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Editor's note: The reading of comics is an important leisure time activity of children. The authors present an analysis of these interests and suggestions for further research.

IT IS not often that the characters of the comic strips express opinions about comic strips. But recently one of these characters, Aunt Het by name, made this observation about one of her friends, "Bill is a highbrow, with a lot of college degrees, and I reckon he's smart in some ways; but his being too snooty to read the comic strips is just plain silly. How can he teach history like it was important if he feels above the history we're making? Folks that dig up our civilization are going to learn more about us from our comic strips than by looking at ruins." Aunt Het may prove to be a poor prophet; but she is no doubt right in one respect. The comic strip is a distinctive and revealing feature of our American culture. Something of the extent to which it affects us all is suggested by the fact that there are over 1200 different comic strips and that comics are published in almost all of our newspapers. Roger Gay[1] has estimated that 80,000,000 Americans read the Sunday supplement comics alone. Even the teachers are impressed. An English teacher has asserted that "We Americans do think in comic supplement terms."[2] He goes on to develop the thesis that the comic strips bid fair to become the basis for an American mythology—they are, says he, "genuine materials of the American cult."

PREVIOUS STUDIES

An exploratory study of children's interests in comic strips was undertaken because of the lack of objective information about the nature of these interests. That children enjoy the comics almost goes without saying. They seem to prefer them to many other forms of amusement and read them

* A paper presented before a section of the American Educational Research Association, Cleveland, February 27, 1939.

[1] Gay, Roger C. "A Teacher Reads the Comics," *Harvard Educational Review*, VII (March, 1937), pp. 198–209.

[2] Drachman, Julian M. "Prospectus for an American Mythology," *English Teachers Journal*, (H. S. Ed.), XIX (Dec., 1930), pp. 781–788.

whether or not they read other parts of the newspaper. Eisenberg asked over 3000 school children in grades five through eight to make paired comparisons to determine the relative attractiveness of listening to the radio and doing nine other things. "Only three activities were preferred by both sexes to the radio . . . going to the movies, listening to an orchestra on the stage, and reading the funnies."[3] That children prefer the comic section to any other part of the newspaper is suggested by Brown's study of 2500 children in grades five, eight, ten, and twelve. These children indicated an overwhelming preference for the comics over all other parts of the newspaper.[4] Lehman and Witty[5] have shown that both boys and girls of ages eight to fifteen engage in "looking at the Sunday 'funny' paper" more commonly than any other play activity and that, although this was not their favorite activity, it is one they prefer to many others.

Beyond such expressions of preference as these, we know very little about children's interests in comic strips. We ought to have answers to such questions as these: What comics do children prefer and what bearing do age, sex, and other types of differences have upon these preferences? Why do children show greater interest in some comics than in others? What is the content of the comic strips, particularly, what sort of standards of conduct are they holding up to the child? What do children learn from the comics and how does this learning affect their conduct? Answers to such questions would add materially to our understanding of child growth. The educator, who needs must be concerned with the extra-school agencies of education and who must utilize the vital interests of the child, would be aided by such information. This report will touch on the first three of these questions, although it will but partially answer them.

The term "Comic Strips" is used here for want of a better means of identifying the cartoon story. It is a term that is no longer adequate to cover the type of cartoons to which it is supposed to apply. Many "comics" are no longer comical. For example, the content of the comic most popular among the children we studied is devoid of anything even remotely humorous.

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[3] Eisenberg, Azriel L. *Children and Radio Programs* (New York: Columbia University Press, 1936), p. 81.

[4] Brown, Francis J. *The Sociology of Childhood* (New York: Prentice-Hall, 1939), p. 343.

[5] Lehman, H. C., and Witty, P. A. *The Psychology of Play Activities* (New York: A. S. Barnes, 1927), pp. 51–57.

PROCEDURE

As a preliminary survey, 240 children in grades four, five and six of Philadelphia elementary schools were asked to write answers to these two questions: What comics do you like best? Why do you like these comics best? These free-response statements were analyzed to determine a list of comic strips of interest to this particular grade group. Fifty-seven different comics were mentioned. These were arranged in random order in the form of a check list by means of which children could check the comics they read "all the time," those they read "sometimes," and the five they "like best." Space was also provided for them to state the reasons why they liked these particular ones. This questionnaire was given in the spring of 1938 to 256 children in the fourth, fifth, and sixth grades of the Smith School, Philadelphia, and the Bywood School, Upper Darby, a suburb of Philadelphia. These same children also took a 30-item multiple choice test covering facts regarding those comic strips revealed to be most popular by the preliminary survey. The responses of the children on this test were to be a partial check on the reliability of their indicated preferences.

Of the 256 children who responded to the questionnaire, 115 were boys, 141 were girls. Ninety-five were white children and 161 were negro children. The disproportionately large number of colored children may have affected the results somewhat; but it is doubtful that the effect was significant. At least there were greater differences between the sexes of the same race, than between the races in their preferences. These children ranged in age from nine to seventeen; but ninety percent of them were ten, eleven, or twelve years of age. The average age was eleven years.

READING PRACTICES

The average youngster of this group said he read twenty-three comics "all the time" and ten more "sometimes." The white children apparently read more comics than the colored children, the average white child having checked thirty-three comics as read all the time, the average colored child seventeen. This is no doubt a matter of opportunity, the colored children coming from homes in which papers are less often provided and in which there are fewer different papers. Girls read fewer comics than boys, on the average, at least the average girl checked twenty comics as read all the time, the average boy twenty-seven. This difference was characteristic of both races.

That these children checked rather accurately those comics they really read is suggested by the relatively high degree of relationship between the number of comics they checked to their scores on the test of comic strip information. Their scores on this test correlated +.78 P.E. .03 with the number of comics checked as read "all the time" and "sometimes." Considering the brevity of the test, the correlation is suggestive of a reasonably high degree of accuracy for the children's expressed reading practices. White children made a mean score of 26 on this information test, negro children a mean score of 17. The boys made a mean score of 21, the girls a mean score of 20. These differences are consistent with the differences in numbers of comics read by the different race and sex groups.

If the fifty-seven comic strips are ranked on the basis of the frequency with which they were checked as being read all of the time, it is possible by rank-difference correlation to get a rough indication of the relation of the preferences of the different sex and race groups. All of these correlations fell between +.60 and +.68. It would appear that sex differences in comic preferences are greater than race differences. For example, the lowest correlation was between colored boys and colored girls, while the highest correlation was between colored boys and white boys. Considering the fact that the colored children lived under adverse economic circumstances, as compared with the white children, and that their opportunities for reading newspapers were restricted, the reading preferences of the two racial groups are surprisingly similar.

The twelve comics most frequently read by the boys of both races were, in order of frequency:

1. Joe Palooka
2. Flash Gordon
3. Dick Tracy
4. Smiling Jack
5. Popeye
6. Snow White
7. Mickey Mouse
8. Tarzan
9. Little Joe
10. Henry
11. Hairbreadth Harry
12. Little King

The twelve comics most frequently read by the girls, in order of frequency were:

1. Snow White
2. Mickey Mouse
3. Blondie
4. Tillie the Toiler
5. Popeye
6. Little King
7. Maggie & Jiggs
8. Flash Gordon
9. Smiling Jack
10. Henry
11. Joe Palooka
12. Dick Tracy

These two lists have nine comics in common. The girls seem to have preferred Blondie, Tillie the Toiler, and Jiggs to Tarzan, Little Joe, and

Hairbreadth Harry. Hairbreadth Harry, however, is a comic that girls read, and, as shown below, is one that was popular with them. These lists of comics frequently read are probably not so significant as the preferences indicated by the comics liked best.

COMIC STRIP PREFERENCES

The comics liked best are much the same ones as those read most constantly, except for a few changes in rank among the favorites which bring in a few comics to replace some among the twelve read most constantly. In order of preference, the twelve which the boys said they liked best were:

1. Smiling Jack
2. Flash Gordon
3. Dick Tracy
4. Popeye
5. Tarzan
6. Mickey Mouse
7. Joe Palooka
8. Snow White
9. Little Joe
10. Henry
11. Hairbreadth Harry
12. Tailspin Tommy

The twelve comics liked best by the girls, in order of preference were:

1. Snow White
2. Smiling Jack
3. Flash Gordon
4. Dick Tracy
5. Blondie
6. Toots and Casper
7. Mickey Mouse
8. Dixie Dugan
9. Popeye
10. Hairbreadth Harry
11. Maggie and Jiggs
12. Tillie the Toiler

There are seven comic strips common to these two lists. Four of these seven are stories of adventure. The preference of the girls for comics of romance and family life is indicated by their favoring Blondie, Toots and Casper, Dixie Dugan, Jiggs, and Tillie over the boys' choices of Tarzan, Joe Palooka, Little Joe, Henry, and Tailspin Tommy.

Age differences in comic preference as revealed by this study are not significant in view of the narrow age range considered. The most popular comics, however, tend to be popular at all the age levels included. There are only two exceptions to this. Henry, a comic almost entirely in pantomime, and Hairbreadth Harry, a most exaggerated melodrama, are more popular with the younger children than with the older ones.

What reasons did these youngsters give for their preferences for certain comic strips? For the most part comic strips are appealing because they are exciting, mysterious, and thrilling; they are full of action and fighting; they tell interesting stories; they present characters whose bravery, strength, beauty, and unfailing ability to master all difficulties appeal to the young heart and mind. Such reasons cover over two thirds of the explanations given by the children for their preferences. The element of humor, from which

these cartoon stories derived their name, is mentioned in only seventeen percent of their explanations. The remaining reasons involve such matters as the interest in aviation stimulated by certain comics popular among boys, the romantic interests of the girls, the interest in strange lands and planets, the educational values of some, the connection of others with familiar fairy tales, and the connection between certain comics and children's hobbies. There were many other specialized interests. Four children even liked a certain comic because it was sad.

It is evident that the boys were particularly attracted by action, adventure, fighting, feats of strength and daring, fantastic tales of life in other lands and planets, thrilling escapades in the field of aviation. While the girls showed a marked interest in these same things, they were also attracted to the element of romance and family life in certain comics, and were much more interested than the boys in the fact that a comic tells a familiar fairy story.

The difference in interest between boys and girls is clearly indicated by a classification of the most popular comics. Using a classification suggested by Gay, eight of the twelve comics most popular among boys are stories of adventure, two are animated cartoons, one is a cartoon of child life, and one a burlesque. Of the twelve comics most popular among the girls, three portray family life, four are adventure stories, two are animated cartoons, two are burlesques (although one of these, Jiggs, portrays family life of a sort). and one is a story of the adventures of a young woman.

RELATION OF INTEREST IN COMICS TO OTHER INTERESTS

Let us note briefly the relation between comic interests and children's interests in reading, the radio, and the movies. There is a marked similarity between the comic strip preferences of the boys in the present study and the reading interests of boys as shown by various investigators. Jordan's list[6] of the "chief satisfiers deduced from books frequently chosen" by boys of ages ten to thirteen could be used without alteration to describe the "satisfiers" indicated by boys' comic strip preferences. Sex differences in comic strip preferences seem to be of the same sort as in the field of reading interests but are not so pronounced. Jordan's list[7] of "chief satisfiers deduced from

[6] Jordan, A. M. *Children's Interests in Reading*, Contributions to Education, No. 107 (New York: Bureau of Publications, Teachers College, Columbia University), p. 135.

[7] *Ibid.*, p. 179.

books frequently chosen" by girls of ages ten to thirteen could not be used without considerable alteration to describe the "satisfiers" indicated by girls' comic strip preferences. Terman and Lima's classification[8] of girls' reading preferences as compared with those of boys' indicates differences between the sexes more striking than the differences in comic strip preferences. This is due mainly to the tendency for the girls of the present study to like the comics of adventure and daring that are so popular among boys.

It is of interest to note that children prefer certain comic strips for reasons very similar to those for which they prefer certain radio programs and movies. If we eliminate the music of the radio, children like radio programs if they are exciting, interesting, full of action and funny,[9] reasons very similar to their reasons for preferring certain comics. Also children of the ages considered seem to prefer movies that embody much the same appeals.[10]

SUMMARY

To summarize briefly, it would seem that:

1. Reading the comics is one of the most common leisure time interests of children of the fourth, fifth, and sixth grades.

2. Children like comic strips primarily for the adventure, excitement, and action portrayed, and secondarily for their humor.

3. Children's interests in comic strips are very similar to their interests in reading, in the radio, and in the movies.

As stated at the outset, this has been but an exploratory study. A much more thorough analysis of this field is needed. Certain studies are now under way which will extend the knowledge of the field somewhat. The authors are extending the study of preferences to larger numbers of children of grades four, five, and six, and are undertaking an analysis of the ethical content of selected comics. A word count to determine the vocabulary of the most popular comics is almost completed. A technique for measuring children's understanding of comic strips is being developed. Beyond such studies as these, there needs to be a determination of the effect of the comics on children's conduct. This is an area of study which is intensely interesting and gives promise of yielding information of substantial educational value.

[8] Terman, L. M., and Lima, M. *Children's Reading* (New York: D. Appleton, 1931), p. 73.
[9] Eisenberg, A. L. *Op. cit.*, p. 87.
[10] Brown, F. J. *Op. cit.*, pp. 301–317.

EXPERIMENTAL APPRAISAL OF A GROUP LEARNING PLAN

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Editor's note: One hears much these days about the socializing activities of the school and their importance. The author presents the results of an experimental study from which he concludes that a socializing procedure employed in a college sociology class produced measurable changes in personality.

THIS article reports the results of an experimental appraisal of a group discussion plan of conducting a college class in sociology. Under this method of learning, the class is first divided into a number of student-led discussion groups of five members each. Then, during the class period, these groups participate in discussion involving the meaning and application of the facts, concepts, and principles of the course.[1] Such a plan, properly supervised by an instructor, allows for a maximum of student activity, especially in the form of verbal participation.

Evidence of the relative amount of verbal participation under the group discussion and traditional recitation-discussion methods was obtained by counting and computing the mean participation in a class of 35, using the group method 25 minutes and comparing it with the mean participation in a traditional class in the same subject during a period of 50 minutes. Both classes were taught by the same instructor; and a special effort was made to stimulate a large amount of participation in the recitation-discussion class. The results of the two trials showed a mean participation of 27.6 times under the group participation plan and 1.07 under the recitation-discussion plan. Apparently, the amount of participation was about fifty times greater under the group discussion method.

Theoretically, more participation means more personality growth.[2] Our problem is to discover if the greater participation provided by the group method does, in reality, make more changes in personality than the traditional class-recitation-discussion method. To attack the problem the experimental

[1] For additional details of this plan, see: Leslie D. Zeleny, "Teaching Sociology by a Discussion Group Method," *Sociology and Social Research,* (November–December, 1927), pp. 162–172.

[2] S. R. Slavson, *Creative Group Education* (New York, The Association Press, 1937).

method was used to compare changes in knowledge, attitudes, personality adjustment, leadership, co-operation, study habits, etc.

In the studies reported below, students to be compared in the experimental (group discussion) and control (class recitation) groups were taught in the same classroom by the same instructor using his best efforts in both instances. Everything was kept the same as much as possible except the method of instruction and the class size—the class size was varied in different ways, as will be shown, with no apparent effect on the result. In addition, the differences in the capacities of students were reduced as far as possible by selecting from the experimental and control groups only those students who could be paired for age (limit 18–25 years), sex,[3] social status (only those with parents from middle class occupations were used), intelligence (measured by percentile score on the Teachers College Psychological Examination), and initial score on the objective test used.

I. RELATIVE CHANGES IN KNOWLEDGE

In the first experiment (♯1) a class of 17, taught one-half time by the group method, was compared over a period of six weeks with a class of 38 taught by the recitation-discussion method. Mean changes between initial and final tests of 11 equated pairs were compared. A second comparison (♯2) was made between 13 equated pairs from a small class of 18 taught full time by the group method and the control used in the first experiment. Third and fourth (♯3 and ♯4) experimental groups were composed of 29 students compared with a control group of 32 students, the total female enrollment of one moderate sized class of 26 women and one small class of six women. Two experimental periods of three weeks' duration were conducted.

Table I summarizes the results of the four series of matched pairs; and the summary of the table is a statistical comparison of 54 matched pairs; including some of the same persons used in different experiments, as described.

Finally, a rotation experiment (♯5) was conducted with two classes; men and women included. For a period of five and one-half weeks class A

[3] Only women were used as there are small proportions of men in teachers college classes.

TABLE I[4]

SUMMARY OF RESULTS OF FOUR CONTROLLED COMPARISONS BETWEEN EQUATED PAIRS USING GROUP DISCUSSION AND CLASS RECITATION METHODS

Trial	N	Mean Change Group Method	Mean Change Class Method	D*	SDD	EC‡
1.	11	34.5	31.2	+3.3	2.51	.474
2.	13	32.0	29.8	+2.2	1.52	.524
3.	16	39.3	38.5	+0.8	1.45	.19
4.	14	31.2	29.5	+1.7	1.45	.243
	54	34.5	32.5	+2.0	1.1	.65

* A "+" means the difference is in favor of the group method.
‡ An EC of .65 means that the chances are more than 25 to 1 that obtained difference is above zero. To be statistically significant the EC should be 1 or more; but four experiments all showing the same tendency are in their totality significant.

(N = 46) was conducted by the group method[5] and class B (N = 38) was conducted by the class recitation-discussion method. Materials, classroom, instructor, zeal of instructor and all other factors were, insofar as possible, kept the same,—the variable was the method of instruction. At the beginning of the second five and one-half weeks the methods were reversed. This solved the problem of equivalence and provided a situation in which the same students experienced each method for an equal period of time.[6] The results showed a difference of +0.7 (SDD 3.5; EC .07) in favor of the group method.

All five controlled experiments showed that slightly more knowledge of sociology was acquired by use of the group discussion method than by the class recitation-discussion method.[7]

II. RELATIVE CHANGES IN ATTITUDES

An attitudes test was administered to both experimental and control groups[8] at the beginning and end of a ten weeks' experiment.[9] The results for two paired groups of 14 members each were:

Trial	N	D	SDD	EC
1	14	+1.94	1.35	.536

[4] The reliability coefficients of the objective tests used were: experiments #1 and #2, .71; #3, .93, and #4, .84.
[5] Not more than one hour lecture was allowed.
[6] Reliability coefficients of tests used in experiment #5 were: .95 and .90.
[7] See Albert Ernest Brown, *The Effectiveness of Large Classes at the College Level, Studies in Education*, VII, No. 3 (Iowa City: University of Iowa, 1932), for partial confirmation of these results in courses in psychology.
[8] As in experiments #3 and #4—time extended.
[9] The test has been described by Leslie D. Zeleny in "A Brief Survey of Certain Social Opinions," *Journal of Applied Sociology*, IX (September–October, 1926), 56–64. Reliability coefficient .808.

Although the difference was not statistically significant, the chances were more than 11–1 that the difference was greater than zero; and the difference was in favor of the group discussion method.

III. CHANGES IN SCORES ON BERNREUTER PERSONALITY INVENTORY

Further evidence of changes in personality was obtained by making paired comparisons with the assistance of the Bernreuter Personality Inventory.[10] At the beginning and end of a ten weeks' period (during experiments #3 and #4—time extended) the test was administered. The differences on each of the six divisions of the test are shown in Table II.

TABLE II

MEAN CHANGES ON THE BERNREUTER PERSONALITY INVENTORY

Parts	Measure of:	N	M Change Group M	M Change Class M	D*	SDD	EC
B1–N	Neurotic Tendencies	16	—1.2	—7.8	—6.6	15.1	.157
B2–S	Self-Sufficiency	16	+1.0	—2.3	—3.3	10.7	.111
B3–I	Introvert–Extrovert	15	—1.5	—7.5	—6.0	40.0	.054
B4–D	Dominance	16	+11.4	+3.4	+8.0	10.6	.272
F1–C	Confidence	16	—0.5	—13.2	—12.7	13.1	.348
F2–S	Sociability	15	—19.7	+7.9	+27.6	11.1	.893

* A "+" is in favor of the experimental method (group method).

All differences are slight; the algebraic sum, +7.0 is in favor of the group method; but such an interpretation is inaccurate because Bernreuter reports high correlations (.95 and .95) between B1–N, B3–I and F1–C. Furthermore, Bernreuter states that "little is gained through using more than one of these three scales."[11] These scales measure approximately the same thing; hence the differences for these parts should not be added—they should be averaged. When the mean difference on tests B1–N, B3–I, and F1–C is added to the algebraic sum of differences on B2–S, B4–D and F2–S, we have the following result:

Mean difference (B1–N, B3–L and F1–C)	—8.43
Algebraic sum (B2–S, B4–D and F2–S)	+32.30
Difference in favor of group method	+23.87

[10] The Bernreuter Personality Inventory's weaknesses are recognized. In this survey, however, conclusions are drawn for groups, not individuals.

[11] Robert G. Bernreuter, "Manual for the Personality Inventory," Palo Alto, Stanford University Press.

As measured by the Bernreuter Personality Inventory, the discussion group method made more changes (presumably desirable) in personality than did the traditional class method.

IV. CHANGES IN LEADERSHIP, CO-OPERATION ETC.

To supplement the findings on objective tests, students experiencing each method rated its effects upon the development of personality on a nine point unstandardized scale. A comparison of mean ratings was made between an unequated experimental (N = 49) and control group (N = 44). The results are shown in Table III.

TABLE III

COMPARISON OF MEAN PERSONALITY RATINGS OF STUDENTS EXPERIENCING GROUP AND CLASS METHODS

Characteristic	Group Method	Class Method	D*	SDD	EC
Self-Confidence	6.8	5.6	+1.2	1.0	0.43
Leadership	7.3	6.4	+0.9	0.3	1.07
Co-operation	7.7	7.0	+0.7	0.3	0.88
Adaptability (social)	7.7	7.1	+0.6	0.3	0.72
Interestingness	7.8	7.4	+0.4	0.52	0.26
Social Responsibility	7.2	6.8	+0.4	0.27	0.53
Study effort	7.5	7.4	+0.1	---	---
Thought provoking	7.3	7.3	0.0	---	---

* A "+" difference is in favor of the group method. These results were confirmed by three rating surveys of a similar nature.

Students who had experienced both methods under the rotation plan were asked to indicate anonymously the method which they believed was best. The results for one class were as follows: (N = 49) 79.6 percent favored the group method, 6.1 percent preferred the class recitation method, and 14.3 percent did not vote. In the second rotation experiment class 64.2 percent favored the group method.

CONCLUSION

Excepting the disagreement between student ratings and the Bernreuter Inventory on self-confidence, and the uncertain findings regarding study effort and thought provokingness, every experimental approach made in this study showed the group discussion method of learning superior to the traditional recitation-discussion method in the development of personality. More sociological facts were learned, more attitudes were changed, personality became, in general, more socially adjusted and moved more in the direction of leadership, co-operation, sociability, and social responsibility, and students liked

the plan better. We conclude that, under the conditions described in this study, the group learning plan was more effective than the recitation-discussion method in the development of personality.

The validity of this conclusion is supported by the experimental studies of A. E. Brown[12] and Wrightstone[13] who carried out a comprehensive appraisal of activity methods as compared with traditional methods of instruction.

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[12] A. E. Brown, *op. cit.*

[13] J. Wayne Wrightstone, "An Appraisal of Experimental High School Practices," (New York: Teachers College, Columbia University, 1936).

EDITORIAL

DEMOCRACY, EDUCATION, AND RESEARCH

DEVELOPMENTS of the past decade—military, political, economic, social, and educational—especially the repercussions of the past year and the present world scene, cause educational workers to wonder what the future holds for the school. Some fear that billions spent for preparedness will mean curtailment of school budgets and consequent impairment of educational opportunity, while others characterize school programs properly adjusted to the individual as the bulwark of democracy and of national defense, and therefore meriting even increased financial and social support in such times as these. Major research projects and national educational commissions of the past few years, particularly those still in operation in 1940, present evidence that the latter point of view, as expressed in the preceding sentence, is a quite defensible one. Selected illustrations may be cited.[1]

The interdependence of democracy and public education has been admirably expressed through the publications of the Educational Policies Commission, concerned with the unique function, purposes, administration, economic basis, and civic responsibility of education in American democracy. The reports are brilliant expositions of the central place which organized education must hold in any program for the defense and advance of democracy. Another challenging illustration of the exercise of leadership in education, with the retention of democratic processes, is the discussion group project of the National Association of Secondary School Principals. In the majority of the states, high school principals in regional groups and local faculties under their principals' leadership are carrying on systematic discussions of the larger problems of secondary education.

Democratic processes are conditioned by the extent and distribution of educational opportunity. A major force in promoting a more equitable dis-

[1] More detailed descriptions of such projects are available in Carter V. Good, "Educational Progress During the Year, 1939," *School and Society*, LI (March 16, 1940), 321–31.

tribution of educational opportunity among the states and localities, through federal and state efforts to equalize financial support, is the work of the Advisory Committee on Education.

The specific task of the schools of a democracy is above all else the adjustment of youth to the social order. For this purpose the findings of the American Youth Commission, concerned with the education, recreation, health, and employment of youth, are especially significant. Adequate social adjustment means a curriculum centered in areas of living and in controls of conduct, as emphasized in the work of the Commissions on the Relation of School and College and on the Secondary School Curriculum of the Progressive Education Association, and in the publications of the Regents' Inquiry in New York State. Emphasis on such values requires new methods of appraisal, qualitative criteria, and the development of adequate implementation procedures, as illustrated by the previously mentioned projects of the Progressive Education Association, the Cooperative Study of Secondary School Standards, and the Commission on Teacher Education of the American Council on Education.

The present scene and the outlook for the future of society and of education are grave. Depression, war, military dictatorship, and intolerance have delivered death-dealing blows to democracy and to untrammeled education. Yet, substantial progress toward the objectives of the democratic way of life and of schools for a free people has been summarized above. There are both temperate encouragement and a ringing challenge in these prophetic words of three years ago:[2] "The lamps of learning were kindled long ago. They have burned in caves and log cabins, as well as in great buildings erected by wealth and power. We may be sure that no barbarism, new or old, can extinguish them forever. Should society enter upon an age of scorn and neglect, even should the wrath of men tear down the very walls of school buildings, as it burned the library of Alexandria, should one or all these lamps be put out, some hands will rekindle them, and will defend them for a better day."

CARTER V. GOOD

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[2] Charles A. Beard, *The Unique Function of Education in American Democracy*, p. 74. Washington: Educational Policies Commission, 1937.

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

SLAVSON, S. R. *Character Education in a Democracy* (New York: Association Press, 1939), pp. XII + 226. $2.50.

A generation reared under 19th century conventions is baffled by the response of the youth to modern social changes. Some of the oldsters vigorously combat the tendency of the young to flaunt authority and make a mockery of accepted social practices; others shake their heads as they tolerantly acquiesce to behavior which they do not approve, yet are powerless to regulate; still others sit supinely in amazement while the foundations of the cherished social structure seem to crumble before their eyes. And the disintegration of character goes merrily on.

This recent book proposes a corrective. The author frankly states that we cannot hope to stem the tide of change. He points to the fact that the older sanctions which determined character are no longer operative and to the further fact that the youth now indoctrinated with individual freedom looks to the inner promptings of his spirit rather than to the authority of tradition for guidance in his behavior. Character, according to the author's interpretation, is not imposed from without, but comes through inner adaptation to the social environment.

The author would provide for this growth through a system of self-imposed discipline to be administered after the fashion of the current progressive educators. The individualism of the child-centered school, however, is to be tempered according to his idea, by the influence of group life. The child is to develop strength of character through participation in normal social activities.

The book falls in the category of educational sociology. The theory in general follows that of Dewey and the leaders of the progressive education movement. The treatment is modern but inclined to be doctrinaire. It is the kind of frontier thinking that distinguishes the leadership of the Y.M.C.A. It may well be read for the background of courses in education.

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WILSON, GUY M., STONE, MILDRED B., and DALRYMPLE, CHAS. O. Teaching the New Arithmetic (New York: McGraw-Hill Book Company, 1939), pp. XI + 458. $3.00.

This volume is the first extended statement of the position of the senior author, Dr. G. M. Wilson, relative to the teaching of arithmetic. As is well known, for a number of years Dr. Wilson has maintained that our arithmetic curriculum is loaded with much socially useless materials. It is his belief that, if this unwieldy useless mass of subject matter were eliminated from the curriculum, much of the existing difficulty that pupils encounter in mastering this subject would be avoided.

In its place he would have the schools teach to "the point of mastery" the socially useful processes and topics, namely the processes with whole numbers, work with easy like fractions limited to halves, thirds, and fourths, percentage, and interest. The authors of this volume maintain that these topics cover about 95 percent of the socially useful arithmetic. "Mastery of these essentials becomes the drill load in arithmetic for the grades." (p 7). Whatever is taught beyond these phases of computation is to be learned through "informational problem work adjusted to child interests". (p. 7). This split between what Dr. Wilson has called the "drill load" and the "informational load" strikes the reviewer as the unique contribution of this volume.

The book is divided into four parts. In Part I there are five chapters that deal with the aims and functions of arithmetic as viewed by the authors. Emphasis is placed on both computational and social informational arithmetic. Part II deals with the analysis of the arithmetic processes and how to teach them. In this section the authors discuss in some detail the principles underlying Dr. Wilson's well known "Drill books" in the various processes. A "100-per cent standard" of achievement is set up. This standard is maintained to be achievable because "the drill load" is made "small enough" at each level so that pupils can readily achieve it. Systematic drill should follow the development of meanings of topics and processes and should not be started until grade 3, according to the authors. The authors "reject the spiral treatment of topics in favor of unitary treatment". (p. 38). One process, for example, addition, is to be mastered before the next process in this case subtraction, is to be introduced into the drill program. No evidence is given to justify this procedure. Many other interesting suggestions are made.

Part III is devoted to a discussion of problem units and consists chiefly of a criticism of the kinds of verbal problems found in our arithmetic textbooks. Much of the criticism is based on the analysis of textbooks that are now largely out of use. The suggestion is made that a survey should be made of the problem situations that arise in life as a basis of problem materials.

Part IV deals with a miscellaneous set of topics, including "appreciation units" similar to the activity units found in up to date courses of study and textbooks, testing in arithmetic limited wholly to Dr. Wilson's own tests, the possibilities of remedial arithmetic, a check list for selecting a textbook, and then a statement of research needed in arithmetic. An extended classified bibliography dealing with major problems in arithmetic is included in the appendix. The most interesting section here is the chapter dealing with "appreciation units". Dr. Wilson and his associates apparently feel that children will learn a great deal of valuable information through participation in well selected activity units dealing with social applications of number, a position to which the reviewer heartily subscribes. The authors could have made a valuable contribution here if they had set up helpful criteria to assist the teacher in the selection of these units of work.

This volume is a very stimulating treatment of instruction in arithmetic. A point of view is clearly presented and supported. There is much to be said for a program that will stress the mastery of the socially useful processes and topics in arithmetic.

The relegation of much that we now teach to the "informational" part of the program will appeal to many. The fact that according to the authors this body of content is not to be summarily cast out of our schools shows that they are willing to defend the position that these phases of the subject should be taught as their need arises in the activities the children engage in, but that they need not be taught to the point of mastery as a part of the drill program. Not all of the recommendations made by the authors will be accepted by the readers of this book, but they will find all of them challenging and significant. Especially noteworthy will they find the stress placed on teaching so as to develop meaning and understanding before formal "drill" is begun.

LEO J. BRUECKNER.
University of Minnesota

HANSBURG, HENRY. *An Experimental Study of the Effect of the Use of the Print Shop in the Improvement of Spelling, Reading, and Visual Perception.* Contributions to Education, No. 776 (New York: Bureau of Publications, Teachers College, Columbia University, 1939), pp. VIII + 84. $1.60.

In many quarters questions have been raised as to the value of courses in printing that are offered in many elementary and junior high schools. This study by Hansburg presents some helpful information on this point.

The investigation reported covered a period of testing over a period of three years. During one of these years a series of experimental studies was made to determine the relation between printing and various phases of learning. In general the attempt was made to discover how much the spelling ability of children was affected by setting up in type in the print shop words included in tests given before and after the practice in setting up the words in the shop. The equated group method was used throughout the study.

The general test results indicated that the mechanics of English, "specifically spelling, reading, and language usage, were the only curricular subjects affected positively and consistently." Spelling was significantly affected, as determined by the results of four different experiments. The results demonstrated that there was a slight tendency for the printing activity to influence the spelling of words similar in sound and spelling that were not included in the print shop lists. The learning appeared also to be permanent. Work in the print shop did not appear to influence in any way the number of reversals in reading, oral or silent, or in writing words. The above results were true for groups of children but wide variations were found in all groups of children, showing that there is no uniform result that may be expected from all children.

Teachers of print shop courses will be interested in the technics used in this investigation. The results will also be interesting to those concerned with curriculum investigations.

LEO J. BRUECKNER.
University of Minnesota

COLE, LUELLA. *Teaching in the Elementary School* (New York: Farrar and Rinehart, Inc., 1939), pp. XIX + 518. $2.50.

In preparing this book the author followed a very interesting procedure. First she summarized two extensive studies of needs reported by teachers in service. It appears that these teachers indicated that in the great majority of cases they had

received little if any help on these matters in their college courses. In preparing the materials for this volume the author therefore decided that she would attempt to assemble materials and suggestions that would answer as many of these questions as possible.

The book is divided into five parts containing in all twenty-six chapters. Part I deals with "the teacher and her background". It contains chapters on qualifications of teachers, objectives of the elementary school, an analysis of the curriculum, and significant information about the pupils and their characteristics.

Part II deals with "the teacher and her class". This section deals with problems of classroom organization, motivation, discipline, and pupil health.

Part III deals with "the teacher and her subject matter". The eight chapters deal with details of classroom procedures, including the assignment, teaching children how to study, individualization of instruction, diagnosis and remedial teaching, examinations, marks, and promotion.

Part IV deals with "the teacher's professional and social relationships". It contains helpful discussions of the relations of teachers and supervisors, in service education, professional ethics, clerical work, and economic and legal aspects of teaching.

Part V deals with "the teacher at work". The characteristics of good and poor teachers are discussed and a typical day in the life of a beginning teacher is described.

It can be seen from the above analysis that the book deals with a wide range of topics. The treatment of each topic is therefore general but on the whole quite helpful. At the close of each chapter there are general references dealing with the main topic of the chapter and there are also research studies listed that the author regards as significant. The chapters are liberally foot-noted. The discussion is definite and clearly presented. Numerous concrete illustrations are included that should help the reader to understand the points made. The book should serve well as a basic textbook for introductory courses in the work of the teacher.

LEO J. BRUECKNER.
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COLE, MARY I. *Cooperation Between the Faculty of the Campus Elementary Training School and the Other Departments of Teachers Colleges and Normal Schools.* Contributions to Education, No. 746 (New York: Bureau of Publications, Teachers College, Columbia University, 1939), pp. XII + 254. $2.35.

A device that is commonly used to rate various phases of educational programs is the check list. In this report the author discusses the steps in the development and validation of a check list for evaluating the cooperation between the faculty of the campus training school and other departments of teachers colleges. The check list was applied in twenty-five teacher training institutions in different parts of the country during visits by the author during the year 1931. The results of this application constitute the major portion of the thesis.

The basis of the check list was an analysis of cooperative activities found in a variety of books and term papers submitted by students at Columbia University majoring in teacher training. In its final form the list consisted of 57 items grouped under four major headings,

1. participation of members of college departments in the functions of the training school, 2. participation by members of the training school staff in the functions of other college departments; 3. participation of the entire faculty in activities which concern the teacher training institution as a unit, and 4. certain administrative devices which may facilitate cooperation. These items were submitted to three juries for evaluation on a 1000 point scale. The thesis reports the weighted rating for each item by each jury and for the combined juries. The author proposes that the check list should serve as the basis of a self-survey by teacher training institutions. Judging from the reports of practices found during visits by the author there were wide variations in the practices in the institutions contacted. Many of the practices rated high in value by the jury were not found in some of these institutions.

The summary of findings and the recommendations growing out of this study should be of real value to those in charge of our teacher training institutions if they are at all interested in promoting better relations between the members of the staff of the campus practice schools and the members of the regular teachers college staff. The check list contains a considerable number of valuable suggestions. The author has used the method of rating of values by experts as a basis of the ratings of the several items. This procedure obviously is not as sound a one as would be a criterion growing out of a study of practices in institutions that do in fact produce the best teachers.

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TANSIL, REBECCA CATHERINE. *The Contribution of Cumulative Personnel Records to a Teacher Education Program: As Evidenced by their Use at the State Teachers College at Towson, Maryland.* Contributions to Education, No. 764, (New York: Bureau of Publications, Teachers College, Columbia University, 1939), pp. viii + 158. $1.60.

That cumulative student personnel records are valuable in a teacher education program is, in brief, the general conclusion to which the data reported in this monograph lead the author. The investigation was carried on at the State Teachers College in Towson, Maryland, where such records had been used for more than six years. The major aspects of the problem covered by the author pertain to the use and growth of the records, the development of students through the use of records, the attitudes of students and faculty toward the records, and the extent to which the records portray the individual and serve as indexes of success as teachers.

Subjective ratings of judges were used almost exclusively to evaluate the records. Although the assumption of the author that "the judges are competent because of their use of records throughout the college" can be seriously challenged, the agreement of the raters is fairly high and serves as a better criterion of validity than the assumption.

The findings indicate that a surprisingly large percentage of the faculty used the records—63.6 per cent during the first period and 85.5 per cent during the second. The purposes varied, but the most frequent uses were for individualization of instruction, for assignment of students to student teaching centers, and for assistance in understanding the problems of the

individual student. In general the items in the record used most frequently were those that were assigned the highest scale value by the faculty. It is not surprising to find that in this group are the ratings on general ability and other tests given at entrance, general academic averages by semesters, and the final rating for student teaching. Nine administrators who used the records for placement and supervising of the graduates likewise gave high ratings to the same items. At the top of their list was the summary of comments on student teaching, including strong points and suggestions for improvement.

The effort to show the development of students through the use of records was rather abortive. There was no significant difference in scholarship averages of students who came to faculty members for conferences in which the records were used and of those who did not come.

Faculty members agreed much more closely in estimating the success of the graduates when they used the cumulative records than when they depended wholly upon classroom contacts and acquaintance with the student while in college. When based on the records, faculty rankings correlated from .69 to .91. Without the records the correlations ranged from .31 to .74. The records on the whole, however, did not prove to be a very reliable index of success in teaching. The correlation between the average ratings of judges based on the records and the supervisors' ratings of effectiveness in teaching after one to three years of service, was only .27. One item—the rating on student teaching—yielded a higher correlation with the supervisors' ratings (.32).

The author is to be commended for making this careful study of a problem that is exceedingly difficult to investigate. In her final conclusions, however, she permits her enthusiasm for cumulative records to outrun her data when she says that "the cumulative records as used . . . have contributed to classroom instruction by making faculty members more conscious of individual differences of students, and by giving leads in meeting these student needs." She has no data to support this conclusion. The plain facts of her study are that even though teachers and administrators regard the records as valuable, the use of records does not improve the scholarship of students, nor are they as reliable for predicting success in teaching as one single item in the record, the rating in student teaching. Any other values the record may have are still obscure.

ALVIN C. EURICH.
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MCCAUL, MARGARET E. *Guidance for College Students* (Scranton, Penn.: International Textbook Co., 1939), pp. xiii + 231. $1.80.

Broad in scope, this book attempts in three parts: I "To orient the student to college life," II "to furnish a working basis for guidance in personality development," and III "to acquaint the student with conditions in the working world and to assist him in making a wise choice of a vocation." All this in 227 pages!

Part I starts out with a chapter on three major problems confronting college students: What kind of a person do I want to be? As a useful member of society, what do I want to do? How can I attain these goals? The remaining chapters in this part deal with orientation in the college situation, systematic planning of time, use of the library, study techniques and reading.

A general chapter in Part II on the development of personality through a life philosophy, is followed by chapters on various values: civic, aesthetic, recreational, cultural, religious and health. Three chapters in Part III conclude the work with a consideration of bases for choice of vocation, study of occupations and looking ahead.

Aside from the chapter on the library which contains a number of specific and helpful suggestions, the book, as one might surmise from its scope, is too general to be of much help to college freshmen. The best it can do would be to provide a starting point for class discussions of the various questions, during which the instructor would give much more specific and concrete help than the author has made available. For example, for mastering a skill the author suggests: 1. Clearly comprehend the whole; 2. concentrate on selected elements; 3. practice the whole. Without further concrete suggestions from an instructor as to how these steps might be carried out, the freshman is not likely to be helped much by such generalities.

Again, on developing a personality through a life philosophy, the student is told that "Each individual must necessarily study the group standards and ideals, then decide for himself what he wishes to adopt as his own pattern towards which to work." He is not told, however, except in other generalities, just how he is to go about studying group standards and developing his own pattern.

The reviewer recognizes fully that general quotations can be taken from almost any book and out of context the same criticism can be levied against them. This book as a whole, however, gives the same impression that the reader might gain from a few brief excerpts.

One other feature of the book needs to be mentioned and similarly criticized. At the end of each chapter a worksheet for students and instructors is provided, but no directions are given for interpreting the results. For example, at the close of the chapter on study techniques the student is directed to mark himself "low", "average" or "high" in comparison with others he knows on such items as: "When studying, do I assume a bodily attitude of alertness rather than a slouching, indifferent attitude?" He is left bewildered as to what he should do after he has marked all the items. Perhaps the author assumes without stating it that the student should rate "high" on all items. If so, there exists sufficient evidence from studies to challenge the assumption.

Briefly stated, the author attempted too much within the limitations of the number of pages available. There are signs here and there that if she had extended the treatment and made it more specific the book might have been exceptionally useful for college freshmen. As it stands, it is not as helpful as several other books in the field.

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Research Abstracts and Bibliographies

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

Bulletins

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. *Official Report of 1940 Meeting* (Washington, D. C.: American Educational Research Association, May, 1940), 192 pp.

This report contains papers and abstracts of papers presented at St. Louis, February 24–27, 1940.

BRUNNER, EDMUND DES., ET AL. *Social Background of Education,* Review of Educational Research, X, No. 1 (Washington, D. C.: American Educational Research Association, February, 1940), 72 pp.

The authors review the research dealing with: large social forces affecting education, the community and its school, the individual and his environment, the curriculum and social values, educating the adult community, and the social effectiveness of education.

CARR, WILLIAM G., DIRECTOR. *Analysis of Local Provisions for Teacher Retirement,* National Education Association Research Bulletin, XVIII, No. 3 (Washington, D. C.: Research Division, National Education Association, May, 1940), pp. 83–127.

The Research Division presents information concerning local retirement provisions, other provisions for teacher retirement, and the relationship between local and statewide retirement systems.

COGHILL, G. E. *Early Embryonic Somatic Movements in Birds and in Mammals Other Than Man,* Monographs of the Society for Research in Child Development, V, No. 2 (Washington, D. C.: Society for Research in Child Development, National Research Council, 1940), 48 pp.

The author presents new evidence on early movements of mammals, and reviews critically the important contributions on birds and on mammals other than man.

COOK, KATHERINE M. *Public Education in the Panama Canal Zone,* Bulletin 1939, No. 8 (Washington, D. C.: Office of Education, United States Department of the Interior, 1939), 63 pp.

This account of the school system of the Canal Zone includes sections on the Canal Zone community, the history and development of the Canal Zone, schools for white children, schools for colored children, and school housing and equipment.

FREEDMAN, BURRILL. *Truancy as a Symptom. A Psychoanalytic Approach to An Integrated Program of Attendance Work,* Reprinted from the Psychiatric Quarterly Supplement, XIV (Utica, N. Y.: State Hospitals Press, January, 1940), 6 pp.

The author discusses methods of determining the causes of non-attendance.

GAUMNITZ, W. H. *Are the One-Teacher Schools Passing? 18 Years of History,* Pamphlet No. 92 (Washington, D. C.: Office of Education, United States Department of the Interior, 1940), 17 pp.

The author presents and discusses data indicating that the number of one-teacher schools is decreasing.

GLASCOCK, DAVID ALBERT. *The Status of Health and Physical Education in the High Schools of Indiana,* The Teachers College Journal, XI, No. 2 (Terre Haute, Indiana: Indiana State Teachers College, November, 1939), pp. 29–84.

The author presents data on the teaching of health and physical education in the high schools of Indiana in regard to organization of program, material used, equipment, facilities, finance, and teaching personnel as found at the close of the school year in 1932.

GOOD, CARTER V., BECHSTEIN, L. A., and HENDRICKSON, GORDON. *Abstracts. Graduate Theses in Education,* III (Cincinnati, Ohio: Teachers College, University of Cincinnati, 1940), xv + 251 pp.

This volume contains a list of masters' theses together with summaries of doctors' theses at Teachers College, University of Cincinnati, during the years 1937, 1938, 1939.

GRAY, RUTH A. *Bibliography of Research Studies in Education 1937–1938,* Bulletin, 1939, No. 5 (Washington, D. C.: Office of Education, United States Department of the Interior, 1940), 400 pp.

The Library Division of the Office of Education presents its annual bibliography of research in education for the year 1937–38.

HILDRETH, GERTRUDE, and WRIGHT, JOSEPHINE L. *Helping Children to Read* (New York: Bureau of Publications, Teachers College, Columbia University, 1940), 90 pp.

The authors describe a remedial reading program at the summer session of Teachers College including the children and their reading difficulties, specific instructional techniques, and pupil progress.

HOLY, T. C. *Distribution of the Salaries of Ohio County Superintendents and City and Exempted Village Superintendents and High School Principals* (Columbus: Bureau of Educational Research, Ohio State University, April, 1940), 9 pp. Mimeographed.

The author presents data on the salaries of Ohio school superintendents and principals for the year 1939–40.

LATHROP, EDITH A. *One Dollar or Less. Inexpensive Books for School Libraries,* Pamphlet No. 88 (Washington, D. C.: Office of Education, United States Department of the Interior, 1940), 16 pp.

This bulletin contains a sample list of inexpensive books for use in schools where budgets for library books are low.

LINDSAY, A. D. *Democracy Today,* Reprinted from the University of Toronto Quarterly, IX, No. 3 (Toronto: University of Toronto, April, 1940), pp. 253–261.

This reprint is a review of the book, *Democracy Today and Tomorrow,* by Edward Benes, ex-President of Czecho-Slovakia.

Members of Education 335–336M, 1938–1939. *The Emotionalized Attitudes. The Contribution of Research to Teachers Concerned with Learning, Conduct*

and Character (New York: Bureau of Publications, Teachers College, Columbia University, 1940), 107 pp.

The members of a Teachers College class summarize and discuss the practical results of research concerning the measurement of attitudes, the causes of emotionalized attitudes, the effects of emotionalized attitudes, and the modification of emotionalized attitudes.

PAUL, J. B. *Report of the Sophomore Testing Program, Spring 1939,* Research Report No. 39 (Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, April 20, 1940), 19 pp. Mimeographed.

The Bureau of Research compares the attainment of Iowa State Teachers College sophomores with the attainment of other college sophomores on the Cooperative Test Service General Science Test, Contemporary Affairs Test, English Test, and American History Test.

PETERS, CHARLES C. *Abstracts of Studies in Education at the Pennsylvania State College, Part IX (1940),* Studies in Education, No. 22 (State College, Pennsylvania: School of Education, The Pennsylvania State College, 1940), 72 pp.

This bulletin contains abstracts of masters' and doctors' theses in education at Pennsylvania State College for the year 1938–39.

SEIPT, IRENE S., DIRECTOR. *Twenty-Five Years of Progress in Education,* Proceedings of the Fifth Conference on Education and the Exceptional Child (Langhorne, Pennsylvania: Child Research Clinic of The Woods Schools, April, 1939), 51 pp.

The Child Research Clinic presents copies of papers read on: twenty-five years of progress in education at The Woods Schools, application of mental hygiene principles to the classroom, emotions as allies or enemies in learning, mental hygiene and the exceptional child, and the development of child study.

SMITH, HENRY LESTER, and SCOTT, R. FOSTER. *Teacher Tenure in Indiana and the Courts,* Bulletin of the School of Education Indiana University, XVI, No. 3 (Bloomington, Indiana: Bureau of Cooperative Research, School of Education, Indiana University, May, 1940), 81 pp.

The authors review the development and application of laws relative to teacher tenure in Indiana.

Station WBOE. *Report of Radio Activities 1938–1939* (Cleveland: Cleveland Public Schools, 1939), 163 pp.

A year's experimentation in the use of radio in education is described including preparation of programs and technical equipment.

WILLSON, LOUISE. *A Year with a Third Grade in the University School,* Bulletin of the Bureau of School Service, XII, No. 3 (Lexington: University of Kentucky, March, 1940), 123 pp.

This bulletin contains a description of a year's program of a third grade in the University School at the University of Kentucky.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

BEDELL, RALPH. "The Science Interests of Successful Elementary Teachers," *Science Education,* XXIV, No. 4 (April, 1940), pp. 193–199.

The author presents data from which he concludes that the science interests of

successful elementary teachers show fewer likes for science than do the interests of women in general.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

SEYFERT, WARREN C. "What the Public Thinks of Its Schools," *The School Review,* XLVIII, No. 6 (June, 1940), pp. 417–427.

The author presents data on public opinion relative to the schools.

CURRICULA AND OBJECTIVES

THORNDIKE, ROBERT L., and HENRY, FLORENCE. "Differences in Reading Interests Related to Differences in Sex and Intelligence Level," *The Elementary School Journal,* XL, No. 10 (June, 1940), pp. 751–763.

The authors present the results of a questionnaire study of the reading interests of seventh and eighth grade pupils.

PSYCHOLOGY OF LEARNING AND TEACHING

CARPENTER, HARRY A. "An Experiment with Recorded Science Lessons," *Science Education,* XIV, No. 4 (April, 1940), pp. 181–186.

From a study involving eleven thousand school pupils, the author concludes that recorded science lessons promote interest in science and have a place in science teaching.

LEGGITT, DOROTHY. "Perceptual Learning in Penmanship," *The Elementary School Journal,* XL, No. 10 (June, 1940), pp. 764–770.

The author presents data from an experimental study indicating that training in perceptual learning produced improvement in handwriting.

PUPIL GUIDANCE, WELFARE AND DEVELOPMENT

ECKERT, RALPH G., and KEYS, NOEL. "Public Speaking as a Cue to Personality Adjustment," *The Journal of Applied Psychology,* XXIV, No. 2 (April, 1940), pp. 144–153.

The authors find little relationship between speaking effectiveness and scores on personality adjustment inventories.

ORR, DOROTHY. "The Relation Between Corrected Vision and Personality Traits," *Peabody Journal of Education,* XVII, No. 6 (May, 1940), pp. 341–349.

The author makes a study of the effect of corrected vision upon character traits and concludes that improvement results.

STRAKER, AYMERIC, and THOULESS, ROBERT H. "Preliminary Results of Cambridge Survey of Evacuated Children," *The British Journal of Educational Psychology,* X, Part 2 (June, 1940), pp. 97–113.

The authors present data on the adjustment of evacuated children.

TENENBAUM, SAMUEL. "Uncontrolled Expressions of Children's Attitudes Toward School," *The Elementary School Journal,* XL, No. 9 (May, 1940), pp. 670–678.

The author presents data from an investigation conducted with 639 children in three New York City elementary schools from which he concludes that the community may be important in creating pupil attitudes concerning the school.

STATISTICS, MEASUREMENTS AND SCIENTIFIC TECHNIQUES

ROFF, MERRILL, and ROFF, LOUISE. "An Analysis of the Variance of Conflict Behavior in Preschool Children," *Child Development*, XI, No. 1 (March, 1940), pp. 43–60.

The authors present the results of a study in which the analysis of variance technique was applied to individual differences of personality characteristics of preschool children. They conclude that there is a need for more concrete descriptions of differences in social and family backgrounds than are now available for explanation of behavior differences.

NEW TESTS

ENGELHART, MAX D., and THURSTONE, THELMA GWINN. *The Chicago Reading Tests* (Milwaukee: E. M. Hale and Co., 1939), 4 tests.

This series of reading achievement tests include: Test A, for grades 1 and 2; Test B, for grades 2, 3, and 4; Test C, for grades 4, 5, and 6; and Test D, for grades 6, 7, and 8. Each form has its own manual, norms, and scoring key.

LINN, H. H., HELM, L. C., and GRABARKIEWICZ, K. P. *Check List Forms for Rating School Custodial Service* (New York: Bureau of Publications, Teachers College, Columbia University, 1940), 14 forms, 1 to 2 pages each.

These fourteen check lists are for use by school custodians in inspecting their own work or by supervisors for inspecting custodial service, and include lists on: walks and entrances, corridors, stairs, offices, classrooms and libraries, laboratories and shops, toilet rooms, auditoriums, gymnasiums, swimming pools, locker and dressing rooms, custodial service areas, heating and mechanical service areas, and lawns and gardens.

SPITZER, H. F., and OTHERS. *Iowa Every-Pupil Tests of Basic Skills, Elementary Battery—Grades 3, 4, and 5, Form L* (Boston: Houghton Mifflin Company, 1940), 4 tests, 8 pages each.

These tests are designed to measure pupil mastery of reading skills essential to success in all subjects. The parts of the battery for grades 3, 4, and 5 are: Test A, silent reading comprehension; Test B, work-study skills; Test C, basic language skills; and Test D, basic arithmetic skills.

SPITZER, H. F., and OTHERS. *Iowa Every-Pupil Tests of Basic Skills, Advanced Battery—Grades 6, 7, and 8, Form L* (Boston: Houghton Mifflin Company, 1940), 4 tests, 6 and 8 pages each.

The Advanced Battery of the Iowa tests which is for grades 6, 7, and 8 covers the same reading skills as the Elementary Battery.

Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

SELECTED BIBLIOGRAPHY ON THE METHODOLOGY OF EDUCATIONAL RESEARCH AND RELATED PROBLEMS, 1939–1940

CARTER V. GOOD
University of Cincinnati

THIS is the eleventh annual bibliography on the methodology or techniques of educational research to be published in the *Journal of Educational Research*. It covers approximately the period from July 1, 1939, to July 1, 1940. The earlier bibliographies, as a rule, have appeared in the September number of the *Journal*.

Under the first heading of the bibliography especial attention should be directed to reviews of progress or analyses of current issues as follows: school administration (the March, 1940, issue of the *American School Board Journal*), secondary education (the National Committee on Coordination in Secondary Education), teacher education (Harper), social thought and the modern mind (Judd and Others, Randall), and science (Kaempffert, Levy, Sedgwick and Tyler, Shepherd, Taylor, Wendt).

The second group of references presents impressive evidence of the fact that, as the literature of education expands, there is a corresponding increase in the number of summaries and bibliographies. This statement is well illustrated by the number of abstract volumes and lists of graduate theses included under the second heading.

An array of volumes has appeared during the past year, as represented by the third section, dealing with investigational methods in the following areas: educational research (American Council on Education), research in business education (Haynes and Humphrey), history (Federn, Johnson, Kellett, Macmurray, Miller, Oman, Salvemini, Taylor, Young), social science methods and social work (Bartlett and Others, Hollis, Lindenberg, Schmidt), psychology and child development (Gesell and Others, Munn, Scheidemann, Witmer), testing (Broom, McCloy, Noble, Wechsler), statistics (Croxton and Cowden, Dunlap, Gray and Votaw, Lindquist, Peters and Van Voorhis, Van Ormer and Williams), and graphic representation (Brinton).

The evaluation movement has now reached the point where an "evaluation of evaluation" has appeared in print (Orata). Among the other references in the fourth section, concerned with appraisal, are the following: the social function of science and the relation be-

tween philosophy and science (Bernal, Breed, Ratner and Dewey), and the evaluation of secondary schools (Cooperative Study of Secondary School Standards).

The references under the last heading of the present bibliography are evidence of a keen interest in the development of graduate and research programs, as illustrated by: the graduate school and graduate instruction (Bowman, Horton, Jones, McCuistion, Stansbury), philanthropic foundations (Coon, Seybold), the research program of the United States Office of Education (Judd), and cooperation between the scholars in the social sciences (Lynd).

I. PROBLEMS, ISSUES, AND TRENDS: NEEDED RESEARCH

ALLPORT, G. W. "The Psychologist's Frame of Reference," *Psychological Bulletin*, XXXVII (January, 1940), 1–28. Based in part on an analysis of psychological journals to discover trends by way of the problems treated.

BARR, A. S. "Some Problems in the Measurement of Teaching Ability," *Journal of Educational Research*, XXXIII (January, 1940), 363–365.

BENNETT, HENRY EASTMAN. "Fifty Years of School Seating," *American School Board Journal*, C (March, 1940), 41–3, 125.

BOUCHER, C. S. "Some Current Educational Problems and Some Possible Readjustments," *North Central Association Quarterly*, XIV (April, 1940), 362–84.

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